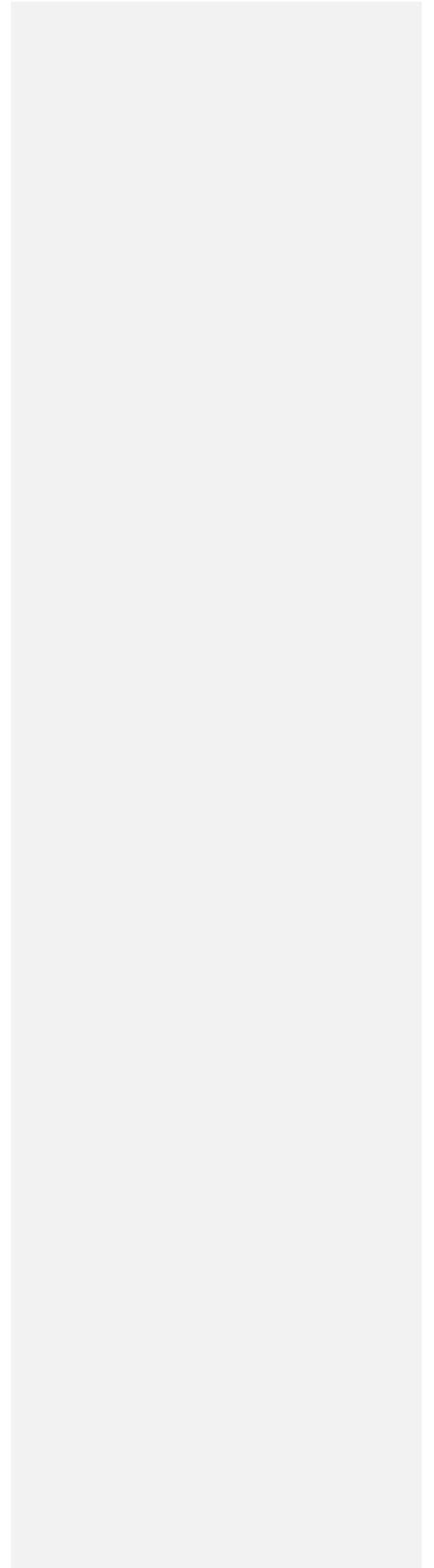


APPENDIX 'N'

**NORTH CENTRAL LOCAL AREA CONSERVATION PLAN AND
POPULATION MANAGEMENT UNIT PLANS COMPLETED TO DATE**



NORTH CENTRAL NEVADA SAGE GROUSE CONSERVATION PLAN

PREFACE

The North Central Nevada Local Area Planning Group (NCLAPG) includes individuals from the Nevada Division of Wildlife, the Bureau of Land Management, the US Forest Service, the University of Nevada Cooperative Extension, the Nevada Farm Bureau, county government, sportsmen, ranchers, trappers, conservation groups, mining, and tribal interests.

The planning effort initially had about 30 participants. Twelve to fifteen individuals form the core-planning group (i.e., regular attendees to planning meetings). The number of attendees at each planning meeting has varied; however, the composition of the group has been consistent. Most members are employed by federal and state agencies.

Seven task forces (committees) were established to meet the goals of the statewide planning effort. These included: 1) delineate/verify PMU's; 2) incentives; 3) adaptive management; 4) Mapping habitat conditions; 5) identify population risks; 6) identify population goals; and 7) plan preparation. County work groups were also formed to deal exclusively with the population management units (PMU) in their respective counties. Each task force gathered relevant information, and passed it to the county work groups where it was massaged to extract information relevant to specific PMU's. The county work groups then passed the information back to the NCLAPG for inclusion in the planning process, with the information from other county groups.

The county work group structure allowed more participation at the local level. Input from interested stakeholders who could not attend scheduled meetings was solicited on an individual basis, which facilitated better participation in the planning process

INTRODUCTION

Background

Sage grouse populations are believed to have declined throughout the planning area in the past 20 to 30 years. The definitive cause(s) of this decline are unknown because appropriate demographic data for each sage grouse population has not been collected. Also, data about changes in habitat composition and structure has not been collected. Sage grouse are a sagebrush obligate species and much of the planning area has burned from wildfire in the past 25 years, effectively removing very large tracts of sagebrush. The conversion of hundreds of thousands of acres of sagebrush grass rangeland to perennial grasslands (seeded or native), annual grasslands, or a combination thereof has resulted in either a loss of total available habitat or a decline in habitat quality

Fire has removed sagebrush from tens-of thousands of acres in the following PMU's: Eden Valley, Lone Willow, Black Rock, Slumbering Hills, Santa Rosa; Eugene; Sonoma; East Range; Humboldt Range; Trinity; Majuba; Shawave, and Limbo PMU's. In these PMU's, much of the low elevation (<5,500 to 6,000 ft) Wyoming big sagebrush landscape,

particularly those areas with silty soil, has been converted to annual grassland (largely cheatgrass). Prior to the fires, desired perennial grasses were either largely absent or were present at levels well below their site potential. Post-fire revegetation efforts often failed, or had very limited success. Frequent reburns in many areas and competition for soil water from cheatgrass has precluded the return of sagebrush. Much of the Wyoming sagebrush habitat type either was, or is potential winter habitat for grouse. It is used less for nesting, and early and late brood rearing. In recent years, post-fire seeding efforts have usually included sagebrush as a primary species. The success of these seedings has usually been poor due to climatic variability and/or environmental regulations. The completion of environmental assessments and/or other required assessments often prevents seedings from being implemented in the fall or early winter, before the onset of winter precipitation. Seedings are most successful when seed in the soil receives all of the winter precipitation.

A substantial amount of mid elevation (5,500 to 7,000 ft) sagebrush-grass rangeland also has burned. These areas were initially vegetated with Wyoming big sagebrush, Basin big sagebrush, or mountain big sagebrush, depending on the elevation, aspect, and soil. Many burned areas are proceeding through natural successional stages, and sagebrush is re-establishing on many sites that have better growing conditions (north slope and/or higher elevation). For areas seeded, revegetation success has been better than at low elevations, but not all attempts have been successful.

High elevation (>7,000 ft) sites have had an increase in fire in recent years. Mountain big sagebrush is the most common sagebrush species at higher elevations, and typically it recovers to perennial grasses within several years, with sagebrush well established in 5-7 years (Mike Zelenksi, BLM Soil Scientist, WFO, personal communication).

Pinyon-juniper woodlands cover a significant amount of the Desotoya, Clan Alpine, and Stillwater PMU's. There have been substantially fewer fires in these ranges than on mountain ranges in Pershing and Humboldt Counties. Woodlands on these ranges have been expanding both externally and internally. External expansion has allowed trees to move from fire safe sites (shallow rocky soils) that always produced trees into sagebrush cover types on the upper alluvial fans, canyon bottoms, and hillslope areas with deeper soils. In essence, the area of woodland has increased. Internal expansion is the continuing increase in either tree density or cover where trees have already established. Fire has removed large amounts of woodland from most of the East Range, Humboldt Range and the Eugene Mountains. Lower elevation sites have been converted to cheatgrass, largely because competition for water from the trees, deep duff and litter, and excessive shading reduced the perennial herbaceous understory. Plant succession at higher elevations is variable and depends on how much of the understory component remained at the time of burning and the intensity of the fire.

Long-term information about Sage grouse populations (and their dynamics) in the planning area is largely unknown. Some PMU's are believed to have always had small grouse populations (< several hundred) because the amount and/or quality of the habitat for sage grouse were neither large nor good, respectively. That is, the sagebrush landscapes lacked one or more critical structural elements necessary to provide an adequate amount of high quality habitat to meet all seasonal requirements (i.e., nesting, early and late brood rearing, and winter). Other PMUs have populations estimated at several thousand birds or more.

The reliability of past population estimates is low, at best. Recent work in the Lone Willow PMU clearly demonstrates that traditional census methods (Lek counts) can drastically underestimate population size (unpublished data from NDOW). Sage grouse populations have probably declined substantially (on a percentage basis) in those PMU's with a recent history of large, widespread fires. The numeric decline may not be substantial in PMU's that probably had relatively few birds because the amount and quality of the habitat was not adequate to support a large population. The density and trend in populations in the more productive PMU's is largely unknown.

Comment [AU1]: Need some type of statement that using populations from the 1930, 1950' or some other peak may be inappropriate if the management and environmental conditions that existed in those periods cannot be repeated. Not sure where it should go

Purpose

To maintain self-sustaining Sage Grouse populations on landscape that historically supported sage grouse. Develop a logical and coordinated approach to maintain and/or restore ecologically diverse, sustainable, and contiguous sagebrush landscapes. Base all management proposals and actions on sound science, technology, and economics. .

Goals

- Maintain, and where possible, increase the sage grouse population.
- Develop more in-depth knowledge about sage grouse and sagebrush ecosystems.
- Maintain and restore diverse, healthy, sagebrush communities.
- Develop needed scientific data regarding sage grouse and sagebrush habitat.
- Identify important data gaps and develop protocols for collecting relevant information.
- Increase public involvement in both the planning and management process.
- Increase interagency cooperation between land and wildlife management agencies as well as with private property owners.
- Meet the requirements of the US Fish & Wildlife PECE policy.
- Avoid listing the sage grouse as a threatened or endangered species.

CONSERVATION ASSESSMENT

PLAN AREA

The NCLAPG has the primary sage grouse planning responsibility for 19 population management units (PMUs), located in Churchill, Humboldt, and Pershing counties. Several PMU's have multiple, spatially separated units that must be individually evaluated for habitat conditions and population risks. This approach results in 24 distinct management areas. Additional PMU's are partially located in the planning area, but are being addressed by other planning units.

The PMU's located in Humboldt County are Lone Willow, Santa Rosa, Eden Valley, Slumbering Hills, Pine Forest, Black Rock, and Jackson's. The Sheldon, Massacre, and Buffalo PMU's, are partially located in Humboldt County, but are being addressed by the Washoe Modoc Planning team.

PMU's located in Pershing County are the Sonoma's, Eugene's, East Range, Majuba, Trinity, Shawave, Limbo, Nightingale, and Humboldt. Part of the Battle Mountain PMU is located in the North-Central Planning Area, but it is being assessed by the South Central planning team.

The PMU's located in Churchill County are Stillwater, Clan Alpine and Desatoya. The Desatoya PMU occurs partially in Churchill County and partially in Lander County. It is being addressed by the North Central Sage Grouse Planning group because federal lands in the Desatoya PMU are administrated by the Carson City Field Office of the Bureau of Land Management, and the Carson City Field Office is physically closer to the North Central Planning Area than the South-Central Planning Area. .

The planning area ranges in elevation from about 4,000 ft to almost 10,000 ft. Valley bottoms generally are below the 5,000 ft elevation contour, and most were lake bottoms during the last ice age. Soils usually are fine lakebed silts and/or clays that are high in salt, and have a high pH. The vegetation is predominately salt-desert shrub with occasional stringers of Basin or Wyoming big sagebrush along drainages (mostly ephemeral). The sagebrush stringers typically occur where run-on moisture has leached salts from the soil and there is an increase in effective soil moisture. The salt-desert shrub areas are not sage grouse habitat, and the sagebrush stringers do not provide regular, high quality habitat.

The sagebrush zone generally occurs on the alluvial fans, between about 4,500 and 5,000 ft elevation. Wyoming big sagebrush is the most widespread sagebrush between 4,500 and 6,500 ft elevation. Lahontan sagebrush occurs on old beach terraces with fine soil and high pH levels. Black sagebrush is infrequent in this part of Nevada because the strongly calcareous soils that develop from limestone parent materials are largely absent. The Wyoming big sagebrush sites are important winter habitat for sage grouse, and can provide important nesting and early brood rearing habitat at locations where the site potential for vegetation production permits the growth of an abundant amount of perennial grasses and forbs in the understory beneath the sagebrush.

Mountain big sagebrush and mountain shrub community types are widespread above the 6,000 to 6,500 ft elevation contour. Aspen stands are common in some PMU's particularly in northern Humboldt County. Mountain sagebrush sites have the potential to produce substantially more herbaceous (perennial grasses and forbs) cover and biomass than do Wyoming sagebrush sites. Another common sagebrush above the 6,000 ft elevation is low sagebrush. Low sagebrush sites often produce large quantities of forbs, a critical food source for grouse in the spring and early summer.

The United States has been divided into Major Land Resource Areas (MLRA). Each MLRA is a large land area that is characterized by a particular pattern of soils, vegetation (species composition and amount of annual production), climate (annual and seasonal), water resources (amount and distribution) and land uses (USDA 1981). Population management units located in the planning area are found in five different MLRA's. The Santa Rosa PMU is located in the Owyhee High Plateau MLRA. The Lone Willow, Pine Forest, and Black Rock PMU's are located in the Malheur High Plateau MLRA. Both of these MLRA's are located in the sagebrush steppe region of North America (West 198x). The sagebrush steppe is wetter and cooler than the sagebrush semi-desert region found to

the south (West 198x a) and 198xb). Not only is the total amount of annual precipitation generally higher in the sagebrush steppe, but the amount of spring precipitation is higher and variability between years is less. Growing season precipitation favors shallow rooted herbaceous species, while dormant season precipitation (winter) favors deeper-rooted shrubs.

The Eden Valley, Slumbering Hills, Jackson, Sonoma, East Range, and Eugene PMU's are located in the Humboldt Area MLRA, which covers southern Humboldt County, extreme northwest Pershing County, and the east, north-east third of Pershing County. The Fallon-Lovelock MLRA covers the remainder of Pershing County, and all of Churchill County, except the Desotoya Range (PMU). PMU's in the Fallon-Lovelock MLRA are the Humboldt, Trinity, Sahwave, Majuba, Limbo, Nightingale, Stillwater, and Clan Alpine. The only PMU located in the Central Nevada Basin and Range PMU is the Desotoya.

The number of sagebrush sites known to occur in each MLRA ranges from 25 to over 60. The Humboldt and Fallon-Lovelock PMU's each have 25 sagebrush sites. The Owyhee High Plateau and the Central Nevada Basin and Range MLRA's have 32 and 42 sagebrush sites, respectively. The Malhuier High Plateau has over 60 distinct sagebrush plant communities. For the Malhuier High Plateau, the Owyhee, and the Central Nevada Basin and Range MLRA's it is likely that all potential sagebrush sites are not found in the PMU's located in the planning area, because much of each MLRA is located outside the planning area. The total number of potential sites, however, provides a "qualitative picture" about the diversity of sagebrush community types located in the respective PMU's in each MLRA. Table 1 shows the number of sagebrush ecological sites by sagebrush species in each MLRA.

Table 1. Major Land Resource Areas located in the planning area, and the type and number of sagebrush plant communities in each MLRA

Sagebrush Type	Malhuier High Plateau	Humboldt	Owyhee High Plateau	Fallon-Lovelock	Central Nevada Basin and Range
Low Sage	10	2	6	4	6
Lahontan	3	1	0	4	0
Silver	1	0	1	0	2
Black	1	4	4	2	8
Wyoming/Basin	8	5	5	4	5
Three-tip	1	1	0	0	0
Basin Big	4	2	2	2	2
Mountain Big	19	4	9	4	10
Wyoming	12	6	4	5	8
Early	1	0	1	0	0
Pygmy	0	0	0	0	1

SAGE GROUSE IN PLAN AREA

Historical Distribution- There are no reliable records about which areas of the planning unit were used by sage grouse at the time of initial settlement (arbitrarily defined as 1860). Sage grouse are believed to have occurred throughout the planning area, wherever

sagebrush was the ecologically dominant shrub. Their seasonal distribution at that time is unknown, as is variation in habitat use between years. There is no information about population size, but sage grouse were not frequently mentioned by the early explorers (add citations here).

Based on known habitat requirements, most areas that either produced or are capable of producing (based on soils and climate) Wyoming big sagebrush, mountain big sagebrush, black sagebrush, low sagebrush, and three tip sagebrush probably were/are used by sage grouse at some point in time during the year, or during a multi-year period. Basin big sagebrush areas would have been used very little, if at all, because sage grouse do not select areas with tall (>3 ft) plants. Basin big sage is usually taller than 3 ft. Not all potential use areas, however, are likely to have been used each year, let alone during some part of the year. There are complex interactions among habitat successional stages, annual and seasonal climatic fluctuations; seasonal and interannual habitat quality; and grouse population cycles that determine which areas are used by sage grouse in a given year. For our planning purposes, we equate the PMU's identified in this document as the historical area used by sage grouse. Nothing in this designation implies that historic populations were large or small, or were evenly distributed within and between PMU's. Definitive information about historic population size and use areas is unavailable.

Current Status and Distribution-

There is conflicting information about the current status of the sage grouse population and its distribution, in the planning area. Reliable data are unavailable. Data collected in the Lone Willow PMU during the past two years indicate that population estimates may be low, particularly for PMU's believed to have hundreds to thousands of sage grouse.

Sage grouse are believed to occur in all 22 PMU's at some time during the year. Some PMU's have sufficient habitat to meet all seasonal requirements, while others appear to largely have seasonal use, particularly winter habitat. To accurately assess the current size of the sage grouse population in each PMU, and its seasonal distribution, it will be necessary to collect a substantial amount of PMU specific data over across multiple years. The increased amount and depth of data collection will be necessary to ensure that future management actions are directed at populations with known risks, and that have potential to increase in population density and distribution if known risks are removed or lessened.

Comment [AU2]: Its 19 PMU's the planning area has responsibility for. Majuba and Trinity have subunits that can be lumped or split into one or several PMU's. Parts of other PMU's occur in the Planning area but are being addressed by other planning areas.

BIOLOGICAL OVERVIEW

Taxonomy and Description

Sage Grouse (*Centrocercus urophasianus*) belong to the family Phasianidae (grouse and ptarmigan) and are one of seven species of grouse in North America. They also are known as the sage hen, sage chicken, or sage cock. The Sage Grouse has been held in special reverence by Native American tribes as a magical bird with healing and restorative powers. Lewis and Clark provided the first written accounts of this species during their 1805 expedition. The species was formally described as *Tetrao urophasianus* by C.L. Bonaparte (1827) and later placed in a monotypic genus *Centrocercus*, meaning "spiny-tailed pheasant," by Swainson and Richardson (1832). The species was later differentiated into two subspecies, the Western Sage Grouse (*C.u. phaios*) and the Eastern Sage Grouse (*C.u.*

urophasianus) (Aldrich 1946, 1963; AOU 1957). Similarities in appearance and morphological measurements resulted in poorly defined ranges, and recent genetic work indicates there are no differences between the two subspecies. The subspecies designation has been dropped.

Recent DNA work has identified a small sage grouse population with distinct genetic and behavioral differences in southwest Colorado. The American Ornithologists' Union (AOU) has recognized the birds from this population as a separate species of grouse, *Centrocercus minimus*, now called the Gunnison Sage Grouse. *Centrocercus urophasianus* is referred to as the Greater Sage Grouse by the AOU. (In this document, all name references involve the Greater Sage Grouse, but for purposes of simplicity, the document uses the name "Sage Grouse".)

Sage Grouse are the largest North American grouse. Males range from 27 to 34 inches long and weigh five to seven pounds. Females are 18 to 24 inches long and weigh from two to three pounds. They are grayish-brown with a dark belly, and long and pointed tail feathers. The male is equipped with two air sacs (esophageal pouches), covered with short, stiff, scale-like white feathers, on each side of the lower neck and upper breast. When the pouches are distended, two yellow pear-shaped patches of bare skin are exposed. A yellow fleshy comb occurs above the eye, and long filoplumes extend from the back of the neck and head. The female has the same general appearance but lacks the air sacs and filoplumes. The feet are feathered to the toes on both sexes.

Life History and Habitat Requirements

Breeding/Nesting

Sage Grouse have a lek mating system, and breed from late March through April, and perhaps into early May. The males perform a strutting display to attract females (Bond 1900, Scott 1942, Guillion 1957, Schroeder et al. 1999) The display is part of an active defense of the breeding territory by each male (Hartzler 1972). Most of the breeding is conducted by only a few males (Gibson et al. 1991, Scott 1942, Lumsden 1968, Wiley 1973b, Hartzler and Jenni 1988). Males have no responsibilities for incubation or parental care, and do not exhibit territorial behavior off the leks. Flocks composed of only males are common during the rest of the year.

Sage grouse generally use the same lek sites every year (Simon 1940, Scott 1942, Batterson and Morse 1948, Wiley 1978, Autenrieth 1981). Leks typically are found in open areas about 0.2 to 12 acres in size, and are surrounded by big sagebrush. The taller shrub habitat is important for escape cover and protection from predators (Patterson 1952, Gill 1965). As sage grouse populations decline, the number of males attending leks may decline, or the use of some leks may not occur. Likewise, as populations increase, male attendance on leks typically increases, new leks may be established, or old leks may be re-occupied.

The lek is considered the center of year-round activity for resident Sage Grouse populations (Eng and Schladweiler 1972, Wallestad and Pyraah 1974, Wallestad and Schladweiler 1974). Seasonal habitat may occur only at long distances from the leks, Sage grouse that use spatially isolated habitat patches, separated by long distances (12+ miles), are

migratory. These isolated patches are critical for the survival of those (Connelly et al. 1988, Wakkinen et al. 1992). Most nests are located within 4 miles (6.2 km) of the lek; but hens may nest 12 or more miles (20 km) from the lek (Autenrieth 1981, Wakkinen et al. 1992, Fischer 1994, Hanf et al. 1994).

Nesting and early brood rearing in Nevada generally occurs from April through June. The nest is a shallow depression on the ground, beneath a shrub (usually sagebrush), that is lined in with dry grasses, sagebrush leaves and a few feathers (Batterson and Morse 1948, Autenrieth 1981). The height of shrubs at nest sites varies. Some research suggests sage grouse prefer nests under shrubs that are taller than the average shrub height for the given site (Keller et al. 1941, Trueblood 1954, Klebenow 1969, Wallestad and Pyrah 1974, Autenrieth 1981, Kerster and Willis 1986). Other work indicates nests are not under the tallest shrubs available (Gregg et al. 1994, Sveum et al. 1998b), because of reduced herbaceous cover under larger shrubs (Klebenow 1969).

Optimal late brood rearing (i.e., summer) habitat has a sagebrush-grass (perennial grasses) intermingled with areas of wet meadows, riparian, or irrigated agricultural fields (Connelly et al 2000). As herbaceous vegetation in the sagebrush-grass uplands matures and dries, sage grouse broods increase their use of mesic wet meadows where succulent (green) forbs and grasses, and insects are still available (Savage 1968, Schlatterer and Pyrah 1970, Oakleaf 1971, Neel 1980, Autenrieth 1981, Klebenow 1985). The availability of moist meadows and riparian areas is especially important in drier years and during long drought periods. Klebenow (1982) found that sage grouse use the uplands through late July in wet years because the herbaceous plants remain green longer into the summer. During drought years or years with dry spring months, grouse move to meadow/riparian locations earlier in the summer. In addition, sage grouse in Nevada apparently rely on wet areas for their survival more than in other states because uplands in Nevada generally receive less annual and/or spring-early summer precipitation than other states with sage grouse (Klebenow 1985).

Fall and Winter

Sage Grouse form flocks as brood groups break up in early fall, and move toward their winter range. The timing of this movement varies between locations and years, and depends on the geographic location of the sage grouse population, weather conditions, and snow depth. Sagebrush is essential for survival during the fall, winter, and early spring months.

Seasonal movements are related to severity of winter weather, topography and vegetative cover (Beck 1977). The amount of snow, rather than an affinity for a particular site (Beck 1977, Barrington and Back 1984) determines winter use areas. Sagebrush is the only food source in the winter when forbs are dormant. Winter use areas are located where the sagebrush protrudes at least 10 to 12 inches above the snow, so it can provide both food and cover (Barrington and Back 1984, Hupp and Braun 1989). If snow completely covers the sagebrush, the birds will move to areas where the sagebrush remains exposed. In cold wet winters, the amount of winter range is expected to be substantially reduced.

Food Habits

Sage Grouse adults feed primarily on various species of sagebrush. Chick diets include forbs and invertebrates (Klebenow and Gray 1968, Drut et al. 1994). Insects, especially ants and beetles, are an important component of early brood-rearing habitat (Drut et al. 1994, Fischer et al. 1996). Forbs increase in the diet after the first week and remain the major food item for juveniles throughout the summer. Some of the forbs found in quantity in the diets of juvenile Sage Grouse include: common dandelion (*Taraxacum officinale*), common salsify (*Tragopogon dubius*), prickly lettuce (*Lactuca serriola*), pepperweed (*Lepidium densiflorum*), Harkness gilia (*Linanthus harknessii*), tapertip hawksbeard (*Crepis acuminata*), loco weed (*Astragalus convallarius*), phlox (*Phlox longifolia*), and common yarrow (*Achillea millefolium*) (Klebenow and Gray 1968, Peterson 1970). Sagebrush (*Artemisia sp.*) occurs in only trace amounts until chicks are about five weeks old (Klebenow and Gray 1968, Peterson 1970). Summer food habits of adult grouse are similar to juvenile food habits, with some differences in proportion of foods eaten. As the meadows dry and frost leads to the drying and killing of forbs, Sage Grouse shift their diet primarily to sagebrush leaves (Patterson 1952, Connelly and Markham 1983, Connelly et al. 1988, Wallestad 1975), and sagebrush continues to be the major food item until spring (Girard 1937, Rasmussen and Griner 1938, Patterson 1952, Leach and Hensley 1954, Klebenow and Gray 1968, Peterson 1970, Wallestad et al. 1975).

FACTORS AFFECTING SAGE GROUSE AND THEIR HABITAT

HABITAT

Population Management Units have been delineated. Habitat restoration categories (R-ratings) have been defined, and a protocol determined for classifying ecological status data collected by the BLM into the restoration categories. Data have been mapped in GIS format for all PMU's.

In order to classify habitat into the restoration categories the planning team developed a large number of assumptions as part of a decision support system (DSS). This DSS is valid only for the classification of habitat for sage grouse planning purposes. It is not directly transferable to other resource management objectives that may be in place for the land areas addressed in this document. The classification described in this document does not rate habitat value and/or habitat needs for other species and/or other land uses, which might differ from (and even counter to) the habitat needs for sage grouse.

The assumptions used to classify areas in each PMU into specific habitat quality categories (i.e., broad restoration needs) apply only to locations with soils capable of growing a sagebrush-dominant overstory of sagebrush species used by sage grouse (i.e., woody sagebrush species except for pygmy sagebrush and bud sagebrush). Soils without the potential to produce the appropriate sagebrush (e.g. salt-desert shrub or pinyon-juniper sites) are not included in these assumptions. They generally do not constitute sage grouse habitat.

A particular "habitat condition" classification does not confer any level of "habitat use" by sage grouse or any other species. For example, an area classified as having desired habitat composition" may not have sage grouse for reasons unrelated to plant composition.

Likewise, an area classified as having an insufficient sagebrush canopy or insufficient herbaceous understory to support a large grouse population does not automatically imply a need to make adjust management actions and/or land uses, The habitat classifications developed and the assumptions used to develop the classifications were used to help identify and understand potential risk factors; facilitate the development of pro-active management treatments and strategies; potentially develop incentives so that land users and managers could change their management techniques, goals, or strategies where appropriate; and support inventory, assessment, and monitoring decisions related to implementation of an adaptive management approach to future decision making.

The habitat classification (rating) resulting from application of these assumptions during the assessment process does not preclude or prescribe any particular management decision relative to the uses and management techniques, systems, or applications on the ground (e.g. A seeding with sufficient sagebrush “encroachment” to classify the area as “Key Habitat Area” does not preclude maintenance of the seeding for its original intended purposes, and/or to maintain the understory species. Likewise, an area identified as having insufficient sagebrush cover may have important lek areas, which require short or non-existent sagebrush cover).

The Habitat Task Group expects that the federal agencies, Indian tribes, state agencies, and individuals involved in the management and use of the public lands and forest lands will follow a process of cooperation, coordination, and consultation in the development and implementation of any management decision.

Finally, both the process of classifying sage grouse habitat and the classification’s delineated are flexible. The process provides guidance for: 1) initial categorization; and 2) the protocol for changing such categorization as data becomes available, and/or plant community’s change in species composition and/or abundance through time. The areas/acreage categorized will change in both the short and long-term as unpredictable events (e.g., climate, fire, disease, etc.) occur, additional data are collected, and/or new knowledge is obtained about the habitat requirements and/or biology of sage grouse is developed. For example, an area classified as “key habitat” one year, may burn the next year, creating a condition with insufficient sagebrush canopy.

All classifications, both initial and revised, are expected to be field verified and supported by field data. If not supported by field data, it is the expectation of the Task Group that the categorization will be changed to reflect the assumptions and guidelines outlined below.

As used here:

“Areas with Desired Habitat Structure” are existing sagebrush-dominated areas with good condition understory species composition relative to seasonal needs of the species (aka Key Habitat Areas as referred to at page 32 of The Nevada Sage Grouse Conservation Strategy).

“Potential to increase” means that a static state has not been reached, and the brush can be expected to increase on the site through natural reproduction (e.g. has a nearby or on-site seed source, is not out-competed by annuals and/or seeded species, etc.).

Comment [AU3]: Jeannette: The wording on the text below differs from my last penciled changes. This should work for this ridiculous deadline, but we need to get the corrections for later on.

“Good condition understory species composition relative to seasonal needs of the species” means, for nesting and late season habitat, Understory species composition is irrelevant to the needs of the species in winter habitat, as the diet of sage grouse is sagebrush leaves at this time of year, irrespective of understory species composition, or lack of understory.

R-0

Areas with desired species composition that have sufficient, but not excessive, sagebrush canopy and sufficient grasses and forbs in the understory to provide adequate cover and forage to meet the seasonal needs of sage grouse (nesting, early brooding, summer, fall/winter).

R-1

Areas with potential to produce sagebrush plant communities that have good understory composition of desired grasses and forbs, but lacks sufficient sagebrush canopy.

R-2

Existing sagebrush plant communities with insufficient desired grasses and forbs in the understory.

R-3

Areas with potential to produce sagebrush plant communities but are in varying stages of becoming dominated by Pinyon/Juniper.

R-4

Areas with potential to produce sagebrush plant communities, but are dominated by annual grasses, annual forbs, weeds or bare ground.

X-3

Pinyon/Juniper areas that have crossed the threshold from sagebrush ecological site to Pinyon/Juniper or Juniper woodland or have only had a potential for woodland plant community.

X-4

Areas that have crossed the threshold from sagebrush ecological site to annual grasses, perennial weeds or bare ground or a non sagebrush ecological site.

ASSUMPTIONS:

ANNUAL GRASSLANDS

ASSUMPTION A-1.

FOR ALL SEASONAL HABITATS, AREAS SHOWN IN THE GIS DATA BASE AS DOMINATED BY ANNUAL GRASSES, ARE INITIALLY ASSUMED TO BE “RESTORATION STAGE-4”.

Comment [AU4]: I suggest changing the font to standard upper/lower case structure instead of all caps

ASSUMPTION A-2.

FOR ALL SEASONAL HABITATS, AREAS SHOWN IN THE GIS DATA BASE AS DOMINATED BY ANNUAL GRASSES BASE, BUT WHICH ARE DEMONSTRATED BY FIELD DATA TO EXHIBIT ATTRIBUTES SUITABLE TO OTHER CATEGORIZATIONS DISCUSSED HERE, WILL BE RE-CATEGORIZED AS APPROPRIATE (E.G., AN AREA WHICH IS DEMONSTRATED TO HAVE SUBSTANTIAL PERENNIAL GRASSES WILL BE RE-CATEGORIZED AS RESTORATION STAGE-1).

NATIVE RANGE:

ASSUMPTION N-1.

IN WINTER HABITAT, ALL AREAS SHOWN IN THE GIS DATA BASE INITIALLY (2002) TO HAVE SAGEBRUSH CANOPY, REGARDLESS OF UNDERSTORY OR WITH UNKNOWN ECOLOGICAL CONDITION, ARE ASSUMED TO BE “AREAS WITH DESIRED HABITAT STRUCTURE”.

ASSUMPTION N-2.

IN NESTING AND LATE SEASON HABITAT, AREAS SHOWN IN THE GIS DATA BASE INITIALLY (2002) TO HAVE SAGEBRUSH CANOPY, AND SHOWN TO BE IN “LATE SERAL” OR “POTENTIAL NATURAL COMMUNITY (PNC)” WILL BE CATEGORIZED AS “AREAS WITH DESIRED HABITAT STRUCTURE”.

ASSUMPTION N-2a.

WHERE FIELD DATA DEMONSTRATE THESE AREAS TO NOT HAVE GOOD UNDERSTORY SPECIES COMPOSITION RELATIVE TO SEASONAL NEEDS, THE AREAS WILL BE CATEGORIZED AS “RESTORATION STAGE-2”.

ASSUMPTION N-3.

IN NESTING AND LATE SEASON HABITAT, AREAS SHOWN IN THE GIS DATA BASE INITIALLY (2002) TO HAVE SAGEBRUSH CANOPY AND SHOWN TO BE IN “MID SERAL” OR “EARLY SERAL” ECOLOGICAL CONDITION ARE INITIALLY ASSUMED TO BE “RESTORATION STAGE-2” HABITAT.

ASSUMPTION N-3a.

WHERE FIELD DATA DEMONSTRATES SUCH AREAS TO HAVE GOOD UNDERSTORY SPECIES COMPOSITION RELATIVE TO SEASONAL NEEDS, THE AREAS WILL BE CATEGORIZED AS “AREAS WITH DESIRED HABITAT STRUCTURE” (E.G. AREAS WHICH MAY HAVE BEEN RATED AS MID SERAL OR EARLY SERAL DUE TO PRODUCTION, RATHER THAN SPECIES COMPOSITION).

ASSUMPTION N-4.

IN NESTING AND LATE SEASON HABITAT, AREAS SHOWN IN THE GIS DATA BASE INITIALLY (2002) TO HAVE SAGEBRUSH CANOPY BUT WITH UNKNOWN ECOLOGICAL CONDITION WILL BE CATEGORIZED AS “UNKNOWN”. AS FIELD DATA BECOMES AVAILABLE, THESE AREAS WILL BE PLACED IN THE APPROPRIATE CATEGORY ACCORDING TO THESE ASSUMPTIONS.

SEEDINGS:

ASSUMPTION S-1.

FOR ALL SEASONAL HABITATS, AREAS INITIALLY (2002) SHOWN AS SEEDINGS IN THE GIS DATA BASE ARE INITIALLY ASSUMED TO BE “RESTORATION STAGE-1” HABITAT.

ASSUMPTION S-1a.

WHERE FIELD DATA DEMONSTRATE THESE AREAS TO HAVE FAILED TO ESTABLISH TO THE SEEDED SPECIES, THE AREAS WILL BE CATEGORIZED IN WHOLE OR IN PART AS “RESTORATION STAGE-4” HABITAT.

ASSUMPTION S-1b.

FOR WINTER HABITAT, WHERE FIELD DATA DEMONSTRATES THE AREAS TO HAVE AT LEAST 5% SAGEBRUSH COVER WITH POTENTIAL TO INCREASE, REGARDLESS OF UNDERSTORY COMPOSITION, THE AREAS WILL BE CATEGORIZED AS “AREAS WITH DESIRED HABITAT STRUCTURE”.

ASSUMPTION S-1c.

FOR NESTING AND LATE SEASON HABITAT, WHERE FIELD DATA DEMONSTRATES THE AREAS TO HAVE AT LEAST 5% SAGEBRUSH COVER WITH POTENTIAL TO INCREASE, AND WHICH HAVE A GOOD UNDERSTORY SPECIES COMPOSITION RELATIVE TO SEASONAL NEEDS, THE AREAS WILL BE CATEGORIZED AS “AREAS WITH DESIRED HABITAT STRUCTURE”.

ASSUMPTION S-1d.

FOR NESTING AND LATE SEASON HABITAT, WHERE FIELD DATA DEMONSTRATES THESE AREAS TO HAVE AT LEAST 5% SAGEBRUSH COVER WITH POTENTIAL TO INCREASE, AND WHICH DO NOT HAVE A GOOD UNDERSTORY SPECIES COMPOSITION RELATIVE TO SEASONAL NEEDS, THE AREAS WILL BE CATEGORIZED AS “RESTORATION STAGE-2”.

BURNS:

ASSUMPTION B-1.

FOR ALL SEASONAL HABITATS, AREAS SHOWN AS BURNS IN THE GIS DATA BASE, ARE INITIALLY ASSUMED TO BE “RESTORATION STAGE-4” UNTIL MANAGEMENT ACTIONS OR FIELD DATA DEMONSTRATE A CHANGE IN CATEGORIZATION IS WARRANTED.

ASSUMPTION B-1a.

FOR ALL SEASONAL HABITATS, WHERE FIELD DATA DEMONSTRATES THESE AREAS TO HAVE A GOOD UNDERSTORY SPECIES COMPOSITION, THE AREAS WILL BE CATEGORIZED AS “RESTORATION STAGE-1”.

ASSUMPTION B-1b.

FOR WINTER HABITAT, WHERE FIELD DATA DEMONSTRATES THESE AREAS TO HAVE AT LEAST 5% SAGEBRUSH COVER WITH POTENTIAL TO INCREASE, REGARDLESS OF UNDERSTORY, THE AREAS WILL BE CATEGORIZED AS “AREAS WITH DESIRED HABITAT STRUCTURE.”

ASSUMPTION B-1c.

FOR NESTING AND LATE SEASON HABITAT, WHERE FIELD DATA DEMONSTRATE THESE AREAS TO HAVE AT LEAST 5% SAGEBRUSH COVER WITH POTENTIAL TO INCREASE, AND HAVE A GOOD UNDERSTORY SPECIES COMPOSITION RELATIVE TO SEASONAL NEEDS, THE AREAS WILL BE CATEGORIZED AS “AREAS WITH DESIRED HABITAT STRUCTURE”.

ASSUMPTION B-1d.

FOR NESTING AND LATE SEASON HABITAT, WHERE FIELD DATA DEMONSTRATE THESE AREAS TO HAVE AT LEAST 5% SAGEBRUSH COVER WITH POTENTIAL TO INCREASE, BUT DO NOT HAVE A GOOD UNDERSTORY SPECIES COMPOSITION RELATIVE TO SEASONAL NEEDS, THE AREAS WILL BE CATEGORIZED AS “RESTORATION STAGE-2”.

ASSUMPTION B-2.

FOR ALL SEASONAL HABITATS, AREAS SHOWN AS BURNS IN THE GIS DATA BASE, AREAS WHICH ARE SEEDED FOLLOWING WILDFIRE WILL BE CATEGORIZED UNDER THE SEEDING ASSUMPTIONS OUTLINED ABOVE.

ASSUMPTION B-3.

FOR ALL SEASONAL HABITATS, AREAS SHOWN AS BURNS IN THE GIS DATA BASE, WHERE FIELD DATA DEMONSTRATES THE AREAS TO HAVE RECOVERY OF NATIVE SPECIES, WILL BE CATEGORIZED UNDER THE NATIVE ASSUMPTIONS OUTLINED HEREIN.

PINYON/JUNIPER VEGETATION TYPES:

ASSUMPTION PJ-1.

AREAS INITIALLY SHOWN AS DOMINATED BY PINION/JUNIPER IN THE GIS DATA BASE ARE ASSUMED TO BE “RESTORATION STAGE-3”.

ASSUMPTION PJ-2.

FUTURE CATEGORIZATION OF ANY TYPES CONVERTED FROM PINYON/JUNIPER DOMINANCE WILL FOLLOW THE CATEGORIZATIONS SET OUT UNDER “NATIVE RANGE”, “SEEDINGS”, OR “BURNS”, DEPENDING UPON THE TREATMENT SELECTED FOR CONVERSION.

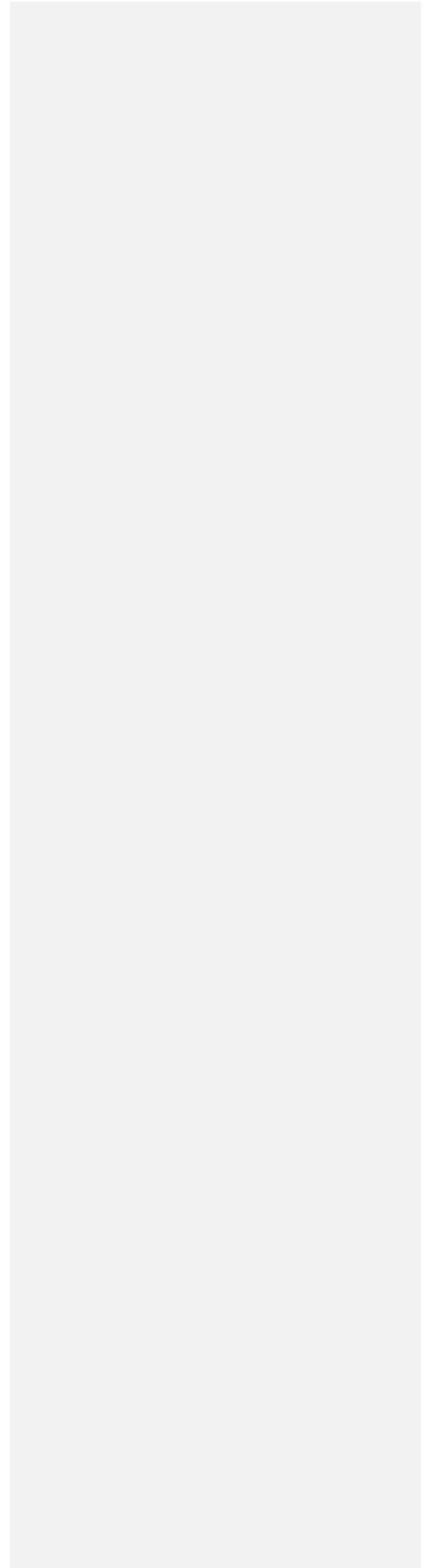
ASSUMPTION PJ-3.

AREAS INITIALLY SHOWN AS DOMINATED BY PINION/JUNIPER IN THE GIS DATA BASE WHICH ARE DETERMINED TO BE “WOODLAND” ECOLOGICAL TYPE WILL BE DE-CATEGORIZED FROM SAGEBRUSH-POTENTIAL HABITAT, AND WILL BE REMOVED FROM “RESTORATION STAGE-3”.

POPULATION RISKS

Population risks are assessed on a PMU by PMU bases. The NCNLPG developed a two-pronged approach to assessing risk. This includes a short summary matrix (Appendix1) designed to determine which potential risks are likely to occur in the PMU. A second matrix (Appendix 2) explores the preliminary results in much greater detail and incorporates several types of scale (bird, spatial, temporal, etc). The goal of this approach is to identify specific problems relative to habitat quality and/or quantity, the land uses, management actions, or ecological process that may be adversely impacting habitat or bird biology, the scale of the problem, whether it is a current or future problem, and whether it is one we can predict and control, or not. This level of detail is necessary to identify important data/knowledge gaps, develop working and testable hypotheses and monitoring programs as part of an adaptive management approach; identify potential incentives for land users; and meet the PECE criteria.

**CLAN ALPINE POPULATION MANAGEMENT UNIT PLAN
NORTH CENTRAL LOCAL CONSERVATION PLANNING AREA**



**CLAN ALPINE POPULATION MANAGEMENT UNIT
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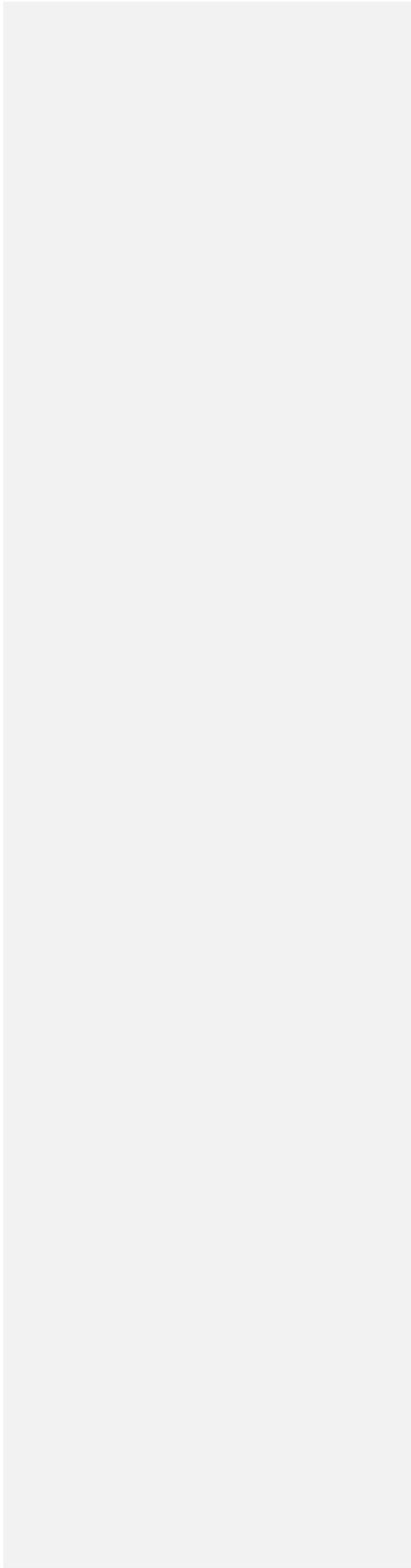
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CLAN ALPINE POPULATION MANAGEMENT UNIT

Summary

The Clan Alpine Sage Grouse Population Management Unit encompasses 500,135 acres in eastern Churchill County. The PMU has approximately 2 percent private land (13,888 acres) and 98% (486,247 acres) public land administered by the Bureau of Land Management. There are 5 private landholders within the Clan Alpine PMU. The population management unit is bounded on the north by the Augusta Mountains, and on the west by Dixie Valley. The southern boundary lies north of U.S. Highway 50 near Middlegate. The eastern boundary for the PMU runs through Edwards Creek and Antelope Valleys.

The elevation varies from approximately 4500 feet in the valleys to 9,993 feet at Augusta Peak. Annual precipitation ranges from approximately 5 inches at the bottom of the valleys to 16 inches at higher elevations. Vegetation includes a mixture of sagebrush ecological sites at the lower elevations, pinion-juniper woodlands at the mid-elevations and pinion juniper, mountain big sagebrush and low sagebrush ecological sites at the upper elevations.

The Clan Alpine Population Management Unit has a small population of sage grouse (est. 200 birds). The estimate is based solely on professional judgment due to insufficient field based census data. Bird numbers in the range are thought to have decreased significantly over the past three decades, but have experienced somewhat stable trends over the last three-year period. Obtaining population data on small low-density sage grouse populations is very difficult. The amount of population data collected to date for this population is limited.

The highest quality sage grouse habitat (R-O) is located in and around the large meadow complex in Cherry Valley. There are currently several large exclosures that provide protection for some of the important meadow and riparian habitats in the valley. Most of the exclosures receive some light grazing use by cattle that get inside the fenced in area by an unlocked gate or a break in the fence. The utilization is generally light and can help keep the vegetation from becoming overgrown and less desirable to sage grouse. Water sources and meadow areas that are located in flat or gently rolling topography receive excessive use by cattle and horses during mid to late summer. The fencing is needed to provide sage grouse and their broods with adequate hiding and loafing cover and to provide an environment for insects, which the chicks depend upon for survival.

The only active lek that exists within the PMU was identified in the spring of 2002. A high count of 14 grouse (10 males and 4 females) was observed on the lek. The lek is located approximately 10 miles south of Cherry Valley. The two leks that were active in the early to mid 1990's were last surveyed in 2002. No sage grouse were observed during the aerial survey. Two historical leks from the 1960's were also surveyed to check for grouse activity, but no birds were observed. Continued monitoring of these leks will help to determine if they are still active. Remote leks that can only be surveyed by helicopter are very difficult to assess over the course of an entire breeding season.

Many of the important late-summer brood rearing habitats have been generally defined and brood surveys are conducted on an annual basis in Cherry Valley. Other important habitats such as winter, nesting and early brood rearing habitats have not yet been identified. In the fall of 2000, NDOW received an interesting report from a deer hunter who reportedly witnessed (with the use of binoculars) approximately 25 sage grouse fly from the top of Desatoya Peak (Desatoya PMU) towards the Mount Augusta area within the Clan Alpine PMU (A distance of approximately 10 miles). Bird movement between adjacent PMU's is thought to occur but has not been documented by radio marking studies. However, the observation does lend credence to the fact that most if not all sage grouse populations in Nevada are connected and that genetic mixing between populations does occur.

Nevada Department of Wildlife biologists believe that there is a low probability for sage grouse to be extirpated from the PMU over the next 20 years. The large PMU runs in a north - south direction and extends for approximately 45 miles in length. Although, the best habitat and highest densities of sage grouse are in the vicinity of Cherry Valley, low densities of sage grouse are scattered throughout the PMU. Due to the fact that densities of grouse are low and that they are spread over a large area, it is not believed that a single or even multiple catastrophic events could extirpate grouse from the PMU. Biologists also feel that the sage grouse population that resides in the Clan Alpine PMU is part of a much larger metapopulation. Movement of sage grouse and genetic mixing between this and other PMU's may or may not occur on an annual basis but is believed to be the reason many smaller populations of grouse continue to persist.

The Clan Alpine sage grouse population trend is down in the long-term but appears to be stable at low levels in the short-term (1-3 years). Harvest and production data from the 1950's, thru the 1970's is limited, however, the number of birds observed during surveys or harvested during open hunting seasons would indicate higher population numbers than what is thought to be present today. Many long time residents of Churchill County also feel that bird numbers were higher during the 1960's and early 70's.

Biologists have expended considerable effort in attempting to collect sage grouse production and recruitment data for this PMU. In 2002, biologists classified a sample of 59 sage grouse during brood surveys in Cherry Valley. The sample provided an average ratio of 1.95 chicks per hen. The fifty-nine birds represents the largest sample obtained in recent years. In 2003, biologists classified a smaller sample of 21 birds with a 2.0 chicks per hen ratio. Heavy rain showers prior to this year's survey are believed to have scattered the grouse and allowed them to be less dependant upon meadow habitats where the surveys are conducted. The same brood survey routes are used each year. The number of birds observed during brood surveys in Cherry Valley is highly dependent upon climatic conditions.

The sage grouse hunting season within the Clan Alpine PMU has been closed since 1999. Since 1950, there have been 26 open hunting seasons. Season length has varied from a nine-day season in 1972 to one day seasons common during the 1950's. A majority of the open hunting seasons ran for either one or two days. Bag limits varied from 2 birds per day and 2 in possession (common since 1973) to a single year high of 5 birds per day and 5 in possession (1950). In general, hunting seasons in Churchill County were conservative during the 1950's, more liberal in the 1960's and early 1970's, and very conservative when

open between 1973 and 1999. The timing of seasons has also changed over the years with an open hunting season in mid-August in 1950, and September openers between 1952 and 1984. In 1985, the NDOW moved the opening date for most sage grouse hunting seasons to October.

The Twin Peaks Fire that burned 30,000 acres in 2000 did not have a significant impact on the sage grouse population because of the low densities of grouse in the area of the burn. The fire occurred to the north of the R-0 habitat in Cherry Valley. The area of the burn was predominately pinion juniper forest prior to the fire. Cheat grass is present at elevations below 7000 feet but due to the lack and timing of moisture was not able to invade the site following the fire. Native vegetation has come back well following the fire. Young sagebrush plants have been observed, however, full recovery is not expected for 10 to 15 years. The Carson Office of the BLM reseeded the burned area with native species during the winter of 2000.

Pinion Juniper has invaded some areas of sagebrush habitat throughout the PMU and is expected to continue to be a factor in the future. The working group is interested in implementing PJ control projects in R-0 and/or R-2 habitats in an effort to protect and restore sage grouse habitats. Specific areas for treatments have not been identified to date but will be assessed over the next five-year period.

Very little information or data are currently known regarding the distribution, movement, and critical habitats of sage grouse in the Clan Alpine PMU. The North Central Planning group believes it is critical for the future management of these sage grouse populations that NDOW continue to learn more about them. More research and data collection is needed prior to implementing many of the management actions outlined in this plan. In order to best manage sage grouse in this PMU, more information is needed regarding important habitats and movement of grouse within the PMU. Locating additional leks and other important habitats will allow managers to design projects that will improve or protect specific areas that are critical for the survival of sage grouse that live in the PMU. The information collected will help to ensure that monies expended on projects are being spent in areas that will be the most beneficial to sage grouse.

Risk Factors:

HABITAT QUALITY – MODERATELY LOW TO MODERATE RISK

A qualitative risk assessment (Appendix 1.) has concluded there is a low to moderate risk to all sage grouse throughout the PMU from a lack of desired forbs and desired perennial herbaceous cover. Risks from these conditions are considered moderate in late brood rearing habitat and low to moderately low in all other habitats. This risk is expected to continue into the future, given current management actions and ecological processes.

There is a moderately low risk to sage grouse from extensive monocultures of mature sagebrush. These monocultures are believed to represent a risk to all sage grouse in the PMU because they occur across multiple watersheds (but not all of the PMU). Their extent is sufficient to reduce the amount of habitat with desired amounts of both sagebrush and

perennial herbaceous species in the understory. Although, not considered a major risk factor at this time, specific areas for potential treatments will be identified over the next five-year period.

The loss of sagebrush-covered rangelands from expanding pinion juniper woodlands has been rated as a moderately high risk. This expansion does not affect the entire PMU but is sufficiently widespread to affect multiple drainages and multiple birds. Under current management programs this risk is expected to continue into the foreseeable future. The risk was rated as moderately high in all seasonal sage grouse habitats.

The loss of sagebrush habitat from fires and the conversion to annual grasslands are currently considered a moderately low risk. The loss of habitat occurred in multiple drainages and was determined to have affected multiple birds. Native vegetation has responded very well following fire. The biggest impacts from fire and cheatgrass invasion occur at the lower to mid elevations. BLM fire plans will need to be amended to protect important R-0 and R-2 sage grouse habitats.

Annual grasses and noxious weeds are present in the PMU but are largely point infestations in individual watersheds. Noxious weeds are currently rated as a low risk but are expected to increase slightly in risk in the future. The potential risk for the noxious weeds to spread and invade sage grouse habitat in the future was determined to be a moderate risk. Annual grasses were not considered by the local group to be a risk factor at this time, but there is the potential for cheatgrass invasion following disturbance.

Sagebrush cover is thought to be too high in some areas of the PMU. The current risk is considered moderately low and is expected to continue into the foreseeable future, especially on early brood rearing and late brood rearing habitat.

The highest quality sage grouse habitat (R-O) is located in and around the large meadow complex in Cherry Valley. There are currently several large exclosures that provide protection for some of the important meadow and riparian habitats in the valley. Additional spring and meadow exclosures would help to protect additional sage grouse habitat within Cherry Valley. The goal is to increase hiding and loafing cover for broods during mid to late summer. Currently, there is insufficient hiding or loafing cover remaining on most unfenced meadow or riparian areas by late summer. The topography of Cherry Valley is flat to gently rolling hills and cattle are drawn to the water sources and meadow during mid to late summer. The Carson Office of the BLM, NDOW and the livestock permittee will work together to design and implement the habitat enhancement projects to ensure that the projects are a benefit to both sage grouse and resource managers.

Several group members believed that a reduction in the number of homesteads and ranches in the PMU over the last one hundred years has led to the loss of irrigated meadows and alfalfa fields that were once used by sage grouse. Many years ago stringer meadows were often irrigated and cut for hay. The irrigated meadows and fields provided sage grouse with additional summer brood rearing and loafing areas.

The amount of R-0 habitat is thought to be below the 40% that is recommended due to poor quality and quantity of sagebrush habitats in other portions of the Clan Alpine Range. The

topography in the northern half of the Clan Alpine Range is steep, rocky and many areas support a thick canopy of pinyon juniper. These areas do not provide grouse with good quality habitat and sage grouse densities are thought to be low in this portion of the range.

Conservation Goals

Protect and enhance the quality of sage grouse habitat in the Clan Alpine PMU through the implementation of management actions outlined in this plan.

Conservation Objectives

1. Over the next five years document the amount of pinyon juniper encroachment through the use of aerial photographs and other mapping sources to help identify areas for future treatment. Protection of important R-0 and R-2 habitats should be a priority.
2. Over the next five years, map areas of monotypic sagebrush to help identify areas that would benefit from mechanical or prescribed treatments. Projects will be designed to create a mosaic of different age classes of sagebrush and increase the amount of herbaceous material for the benefit of sage grouse. BLM, NDOW and the livestock operator will work together to ensure all parties have input into the project's design. Mechanical treatments with as little disturbance to the soils are the preferred methodology in areas prone to cheatgrass invasion. The type of mechanical treatment and number of acres to be treated will be determined when areas for treatment are better defined.
3. Over the next three-year period identify additional water sources and meadow habitats that are in need of protection. The BLM, NDOW and the livestock operator will work together in the design of the project to ensure that it will benefit both sage grouse and resource managers.
4. Continue to aggressively rehabilitate sagebrush habitats that are lost due to summer wildfires or other forms of disturbance. The reseeding efforts should take place during the fall or winter immediately following the fire. Seed mixtures will vary depending on the site but will include species of sagebrush, grasses and forbs that are beneficial to grouse and that are adapted to the area.
5. Over the next three-year period, identify and map areas in the PMU that currently have noxious weeds and take actions to control/eradicate the weeds with herbicides or other methods.
6. Over the next two years, amend the Carson City Office's (BLM) fire plan to call for the "full suppression" of wildfires in R-0 and R-2 sage grouse habitats. Due to the likelihood of cheatgrass invasion (below 6500 feet) and the loss of sagebrush habitats from fire, prescribed burns shall be analyzed on a case-by-case basis to ensure that important sagebrush habitats are protected and that any proposed burn will either be neutral or enhance sage grouse habitat.

7. Over the next five years the Bureau of Land Management will make the necessary adjustments in the management of livestock to ensure that the seasonal habitat requirements of sage grouse are met. An upward trend in sage grouse habitat quality (determined by annual monitoring) will be used to determine whether the necessary improvements in habitat condition are being made. Adjustments in livestock management will be made using the adaptive management approach.
8. Over the next ten-year period, contain and eventually decrease the locations with cheatgrass and mustard. Continue to investigate methods to rehabilitate areas dominated by cheatgrass in an effort to restore these important habitats.
9. Over the next five years determine whether there are areas in the PMU where there is potential to improve sage grouse habitat by restoring fields or meadows that were once irrigated.

Monitoring

1. The Carson City Field Office of the BLM will establish line intercept monitoring transects in nesting/early brood rearing habitats (R-0 habitats) by 2004 (Similar to BLM Winnemucca District protocol). The transects will be measured a minimum of every three year's at the appropriate time of year to ensure sufficient herbaceous vegetation to provide escape and/or thermal cover for sage grouse. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology are the potential limiting factors for nest success.
2. The Carson City Field Office of the BLM should establish riparian utilization cages (minimum of two cages per year per pasture) in all allotments in the PMU. Utilization rates will be measured on major meadow and riparian systems on an annual basis in R-0 habitats. The monitoring is necessary in order to ensure adequate escape/loafing cover for sage grouse. The utilization will be monitored a sufficient number of times throughout the season of use to ensure that the utilization does not exceed the terms and conditions in the existing FMUD. Livestock will be herded away from the area once utilization levels have been met.

HABITAT QUANTITY – LOW TO MODERATE RISK

The loss of sagebrush-covered rangelands from expanding pinion juniper woodlands has been rated as a moderate risk. This expansion does not affect the entire PMU but is sufficiently widespread to affect multiple drainages and multiple birds. Under current management programs this risk is expected to continue into the foreseeable future. The risk was rated as moderate in all seasonal sage grouse habitats.

There is a moderately low risk to sage grouse from extensive monocultures of mature sagebrush. These monocultures are believed to represent a risk to all sage grouse in the PMU because they occur across multiple watersheds (but not all of the PMU). Their extent is sufficient to reduce the amount of habitat with desired amounts of both sagebrush and

perennial herbaceous species in the understory. Although, not considered a major risk factor at this time, specific areas for potential treatments will be identified over the next five-year period.

At this time there is a moderately low risk to multiple birds in the PMU from the loss of meadow habitat in multiple drainages. Under current management programs this risk is expected to continue into the foreseeable future. By using the adaptive management approach, areas of concern will be addressed on an annual basis and adjustments in management made to improve the condition of these important habitats.

A few historical leks have been lost due to power lines and construction of Highway 50 between the Clan Alpine and Desatoya Ranges in the mid 1960's but are not believed to have adversely impacted the population at the PMU scale. The recently discovered Camp Creek lek is the only lek that is known to be currently active. Two other previously identified leks have not been observed to have birds using them in recent years. More intensive monitoring of these leks will be necessary to determine whether the leks are still active. Other leks are thought to exist in the PMU but have not yet been located.

The loss of sagebrush habitat from fires and the conversion to annual grasslands are currently considered a low to moderately low risk. The loss of habitat occurred in multiple drainages and was determined to have affected multiple birds. Native vegetation has responded very well following fire. The biggest impacts from fire and cheatgrass invasion occur at the lower to mid elevations. BLM fire plans will need to be amended to protect important R-0 and R-2 sage grouse habitats

The highest quality sage grouse habitat (R-O) is located in and around the large meadow complex in Cherry Valley. There are currently several large exclosures that provide protection for some of the important meadow and riparian habitats in the valley. Additional spring and meadow exclosures would help to protect important sage grouse habitat within Cherry Valley.

Risks associated with energy related projects, communication sites, transportation corridors, and urban development have all been assessed as to their risk to sage grouse during this process (Risk Assessment Matrix, Appendix 1). The risks were rated as moderately low to moderate. The risks from energy development may increase in the future due to the recent increase in the development of alternative energy sources.

Annual grasses and noxious weeds are present in the PMU but are largely point infestations in individual watersheds. Noxious weeds are currently rated as a low risk but are expected to increase slightly in risk in the future. The potential risk for the noxious weeds to spread and invade sage grouse habitat in the future was determined to be a moderately low risk.

Several group members believed that a reduction in the number of homesteads and ranches in the PMU over the last one hundred years has led to the loss of irrigated meadows and alfalfa fields that were once used by sage grouse. Many years ago stringer meadows were often irrigated and cut for hay. The irrigated meadows and fields provided sage grouse with additional summer brood rearing and loafing areas.

Conservation Goals

Manage for no net loss of sage grouse habitat.

Conservation Objectives

1. Over the next five years document the amount of pinyon juniper encroachment through the use of aerial photographs and other mapping sources to help identify areas for future treatment. Protection of important R-0 and R-2 habitats should be a priority.
2. Over the next three-year's, identify riparian and meadow habitats that are in need of protection and or restoration. Projects will be designed to restore and protect important meadows and spring sources. The projects are needed to provide sufficient hiding and loafing cover for sage grouse brood rearing in the mid to late summer. The BLM, NDOW and the livestock permittee will work together to design and implement projects that are beneficial to both sage grouse and resource managers.
3. Continue to aggressively rehabilitate/reseed sagebrush habitats that are lost from summer wildfires or other forms of disturbance. The reseeding efforts should take place during the fall or winter immediately following the fire. Seed mixtures will vary depending on the site but will include species of sagebrush, grasses and forbs that are beneficial to grouse and that are adapted to the area.
4. Over the next two years amend the Carson City Office (BLM) fire plan to call for "full suppression" in R-0 and R-2 sage grouse habitats. Due to the likelihood of cheatgrass invasion and the loss of sagebrush habitats from fire, prescribed burns shall be analyzed on a case-by-case basis to ensure that important sagebrush habitats are protected. Mechanical treatments are the preferred methodology in areas where cheatgrass invasion is likely.
5. Over the next five years, map areas of monotypic sagebrush to help identify areas that would benefit from mechanical or prescribed treatments. Projects will be designed to create a mosaic of different age classes of sagebrush and increase the amount of herbaceous material for the benefit of sage grouse. BLM, NDOW and the livestock operator will work together to ensure all parties have input into the project's design. Mechanical treatments with as little disturbance to the soils are the preferred methodology in areas prone to cheatgrass invasion. The type of mechanical treatment to be used and number of acres to be treated will be determined when areas for treatment are better defined. No project of this kind has been developed to date in this PMU.
6. Over the next five years, the BLM will manage livestock within the PMU to meet the seasonal habitat requirements of sage grouse. Future risks are expected to decline due to the management actions outlined in this plan. By using the adaptive management approach, areas of concern will be addressed on an annual basis and

adjustments in management made to improve the condition of these important habitats.

7. Through the NEPA process, evaluate the risk of all Realty Actions that may have an impact on sage grouse or sage grouse habitat. Use any other local planning (city, county, or state planning) efforts to predict projects that may impact sage grouse. Avoid any loss of sage grouse habitat from Realty Actions. Mitigation is required for any loss of sage grouse habitat.
8. Over the next three-year period, the BLM or other agencies responsible for weed management should identify and map areas in the PMU that currently have noxious weeds and take action to control/eradicate the weeds with herbicides or other methods.
9. Over the next five years determine whether there are areas in the PMU where there is potential to improve sage grouse habitat by restoring fields or meadows that were once irrigated. These areas may be on private lands where the fields have gone out of production or on public lands where an old homestead used to be that at one time irrigated stringer meadow for hay production.

Monitoring

1. The Carson City Field Office of the BLM will establish line intercept monitoring transects in nesting/early brood rearing habitats (R-0 habitats) by 2004 (Similar to BLM Winnemucca Office protocol). The transects will be measured a minimum of every three year's at the appropriate time of year to ensure sufficient herbaceous vegetation to provide escape and/or thermal cover for sage grouse. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology are the potential limiting factors for nest success.
2. The Carson City Field Office of the BLM should establish riparian utilization cages (minimum of two cages per year per pasture) in all allotments in the PMU. Utilization rates will be measured on major meadow and riparian systems on an annual basis in R-0 habitats. The monitoring is necessary in order to ensure adequate escape/loafing cover for sage grouse. The utilization will be monitored a sufficient number of times throughout the season of use to ensure that the utilization does not exceed the level necessary to maintain sufficient cover for sage grouse. Livestock will be herded away from the area once utilization levels have been met.

FIRE (TO MUCH) – MODERATELY LOW RISK

The loss of sagebrush habitat due to wildfire was rated as a moderately low risk for the Clan Alpine PMU. The loss of habitat was determined to affect multiple drainages and multiple birds. The risk for large wildfires is expected to increase in risk to moderate in the

future. BLM fire plans should be amended in an effort to prevent the loss of important R-0 and R-2 sage grouse habitats.

In recent years, fire frequency has increased. The Twin Peaks fire burned over 30,000 acres to the north of Cherry Valley in 2000. Sage grouse densities were thought to be fairly low in this area due to the steep rugged terrain and the large amount of pinyon juniper in the area. Other wildfires that have burned in the range have also burned in low-density sage grouse habitats. The Carson City Field Office of the BLM reseeded the fires with sagebrush and other plants important to sage grouse. Young sagebrush plants have been observed and most areas are slowly recovering. Response by native grasses and forbs has been very good. Cheatgrass is present at the mid to lower elevations but plant densities are fairly sparse except for a few areas on the northern and eastern portions of the range where sage grouse numbers are very low.

The lack of wildfire in other portions of the PMU (over the last one hundred years) has led to the invasion of pinyon juniper into sagebrush habitats. The loss of sagebrush habitats from PJ encroachment was rated as a moderate risk to sage grouse in the Clan Alpine PMU. Impacts to sage grouse habitat are similar in all sage grouse habitats. However, with the high potential for cheatgrass invasion, prescribed fire to control PJ encroachment should only be attempted where this potential does not exist. The North Central Local Planning group feels that the safer alternative is to use mechanical or chemical treatments to control or eliminate encroaching trees.

Conservation Goals

Prevent the further loss of sagebrush habitat and continue to aggressively rehabilitate burned areas following fire.

Conservation Objectives

1. Areas that are predominately pinion juniper forest that are determined to have high potential for the re-establishment of sagebrush habitat may be allowed to burn if the potential for cheatgrass invasion is low (usually higher elevation sites). Mechanical treatments are the preferred alternative in areas that have a high probability of cheatgrass invasion.
2. Over the next two years amend the Carson City Field Office's (BLM) fire plan to call for "full suppression" in R-0 and R-2 sage grouse habitats. Full suppression is necessary to protect the existing sagebrush habitat from future wildfires. Due to the likelihood of cheatgrass invasion and the loss of sagebrush habitats from fire, prescribed burns shall be analyzed on a case-by-case basis to ensure that important sagebrush habitats are protected. Mechanical treatments are the preferred methodology in areas where cheatgrass invasion is likely. The types of mechanical treatments and number of acres to be treated will be determined once the areas for treatment have been identified and the goals and objective for the particular site have been determined.

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3. Smaller prescribed fires (< 300 acres and in a mosaic pattern) may be allowed if the risk for cheatgrass invasion is minimal. Efforts to control or manipulate pinyon juniper or over mature sagebrush stands must consider the risk of cheatgrass invading the site once the area has been disturbed. Mechanical treatments are the preferred alternative in areas that have a high probability of cheatgrass invasion (below 7000 feet). The types of mechanical treatments and number of acres to be treated will be determined through the use of aerial photos and other mapping sources.
4. The BLM and NDOW will continue to aggressively rehabilitate burned areas by using both native and non-native plant species. Currently, the Winnemucca and Carson Offices of the BLM and NDOW work cooperatively in the planning and strategies for rehabilitation efforts within the North Central Planning Area. It is apparent that the use of non-native species such as Forage Kochia and certain wheatgrasses may be a tool that is needed to out compete cheatgrass and other invasive weeds. The Crested Wheatgrass may be the best choice in areas with a high probability for cheatgrass invasion. Once the wheatgrass has become established then a second treatment to restore the sagebrush component will be necessary.
5. Continue to investigate the most cost effective way to restore sagebrush habitats that have been replaced by cheatgrass and other annual grasses following wildfire. Initiate projects to rehabilitate these areas once a cost effective treatment to restore large acreages has been found.

Monitoring

1. The BLM should set up monitoring transects in areas that have been reseeded in an effort to monitor the success of the effort and to evaluate which treatments or seed mixtures are the most successful in restoring sage grouse habitat. The information will be valuable to resource managers in the planning of future projects (Adaptive Management Approach).
2. NDOW will monitor sage grouse use in the treated areas to determine if: 1) successful re-vegetation efforts result in increased use by sage grouse; and 2) if the area treated must approach some minimal amount (e.g., acreage, percent of a watershed, etc.) for increased sage grouse use to occur.

FIRE (TO LITTLE) – MODERATE RISK

Two large wildfires have burned in the PMU in recent years, however prior to 1998, only a few smaller sized fires occurred. Both of the more recent fires burned in low-density sage grouse habitat that was predominately pinion juniper forest. Some sagebrush habitat was lost but densities of sage grouse in the areas of the fires were considered very low. The Local Area Planning Group considered the potential for a large fire to take place in the PMU a moderate risk.

The North Central Planning Group rated pinyon juniper encroachment as a moderate risk. Pinion juniper is the dominant vegetation type at the mid to upper elevations of the Clan Alpine Range (excluding the upper elevations of Mount Augusta and the meadow complex in Cherry Valley). The lack of wildfire over the last one hundred years has led to the invasion of pinion juniper into areas of sagebrush habitat.

In areas where the potential for cheatgrass invasion exists, prescribed fire should not be used as a management tool. The North Central Planning group feels that the safer alternative is to use mechanical or chemical treatments to control or manipulate over mature sagebrush stands or encroaching trees. The Clan Alpine Wilderness Study Area is located in the central portion of the range and has a high density of pinion juniper.

The lack of fire has also led to over mature sagebrush stands in certain areas of the PMU. These stands have become less productive and no longer meet the seasonal requirements of sage grouse. In some areas sagebrush has encroached into meadow habitats (due to the dropping of the water table).

Conservation Goal

Increase the quality and quantity of sage grouse habitat in the PMU by implementing projects to restore and enhance sagebrush habitats.

Conservation Objectives

1. Over the next five years, identify pinion juniper woodlands that have a high potential for being restored to sagebrush/bunchgrass habitats (i.e., little or no annual grasses) using standard mechanical, chemical, or cultural (fire) control methods. The initial focus will be in R-0 habitats adjacent to Cherry Valley or other areas identified as current important grouse habitat. Access to many of these areas is adequate so that projects can be initiated. The number of acres to be treated and types of treatments for the project will be analyzed when more information has been gathered and specific sites for treatment have been identified.
- 2 The BLM will identify areas in PJ woodlands that have crossed transition thresholds and do not have the potential to return to sagebrush/bunchgrass habitat types following fire, and are likely to become cheatgrass monocultures following any fire. Identification and protection of these areas will help to reduce the likelihood of cheatgrass invading the sites.
 - 2a Revise BLM resource and fire management plans to identify these locations as high priority suppression sites, and to allow local and regional suppression organizations to know where high priority suppression habitat is located. Identification and protection of these areas will help to reduce the likelihood of cheatgrass invading the sites.
 - 2b For areas where conversion to cheatgrass is likely following fire, the BLM will identify locations based on site potential (soil depth, water holding capacity, aspect, etc.) that have the highest probability of being converted to sagebrush/bunchgrass

habitat type using small scale chemical and/or mechanical treatments combined with fall/early winter (Sept-December) reseeding programs.

3. Over the next five years, identify sagebrush/bunchgrass habitat types that have poor herbaceous composition and/or production in the understory, and have a high potential for being restored to diverse sagebrush/bunchgrass habitats (i.e., little or no annual grasses) with standard mechanical, chemical, or cultural (fire) control methods. Initially, focus will be in R-0 habitats adjacent to Cherry Valley or other areas identified as current important grouse habitat.
- 3a Identify areas of sagebrush/bunchgrass habitat types that have crossed transition thresholds and do not have the potential to return to sagebrush/bunchgrass habitat types following fire, and are likely to become cheatgrass monocultures following any fire. Identification and protection of these areas will help to reduce the likelihood of cheatgrass invading the sites.
- 3b Revise BLM resource management plans to identify these locations as high priority suppression sites, and ensure local and regional suppression organizations know where high priority suppression habitat is located. Identification and protection of these areas will help to reduce the likelihood of cheatgrass invading the sites.
- 3c. For areas where conversion to cheatgrass is likely following fire, identify locations based on site potential (soil depth, water holding capacity, aspect, etc.) that have the highest probability of being converted to sagebrush/bunchgrass habitat type if small scale chemical and/or mechanical treatments are combined with fall/early winter (Sept-December) reseeding programs.

Monitoring

1. The BLM shall establish monitoring transects in all reseeded/treated areas to determine project success and increase knowledge about which treatments and/or seed mixtures are most successful, and how success varies with soil type and other environmental variation (e.g., aspect, climate, etc.) The information will be valuable in the planning of future projects (Adaptive Management Approach).
2. NDOW will monitor sage grouse use in the treated areas to determine if: 1) successful re-vegetation efforts result in increased use by sage grouse; and 2) if the area treated must approach some minimal amount (e.g., acreage, percent of a watershed, etc.) for increased sage grouse use to occur.

HARVEST AND POACHING – LOW RISK

Excessive harvest (legal or illegal) may negatively impact sage grouse populations. Small populations are the most vulnerable because harvest may exceed annual recruitment and survival.

The sage grouse hunting season in the Clan Alpine PMU has been closed since 1999. The season will remain closed until multi-year population data indicate the population can support limited harvest. Recreational activity during the summer months is fairly low in this management unit. Densities of sage grouse are considered low even during the hot summer months, hence poaching is not believed to be a risk that is impacting the sage grouse population.

Conservation Goals

Ensure that the harvest of sage grouse (both legal and illegal) does not decrease population size.

Conservation Objectives

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1. The number of sage grouse harvested during an open hunting season shall not exceed 10% of the fall population estimate. The hunting season in the Clan Alpine PMU shall remain closed until such time that sufficient data exist to allow for a sage grouse hunting season (NDOW).
2. Hunting seasons shall be closed in PMU's where less than 100 male grouse have been counted on the strutting grounds during at least one of the previous two breeding seasons (determined by aerial or ground counts of trend leks) or where population levels are small enough that harvest may exceed 10% of the fall population estimate (NDOW). Trend leks should be established and visited 3 or 4 times over the course of the breeding season to obtain the highest count of males in attendance.
3. Maintain the current level of law enforcement patrols in the PMU to monitor and curb the illegal poaching of sage grouse (NDOW).

Monitoring

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1. NDOW, BLM and volunteers will monitor sage grouse population levels through lek counts and brood surveys.
2. NDOW will monitor the number of citations written for the illegal harvest of sage grouse to determine where potential problems may exist.

LAWS, POLICIES AND REGULATIONS THAT CONFLICT WITH BIOLOGICAL NEEDS – MODERATELY LOW RISK

Regulations associated with Wilderness Study Areas (WSA) present a moderate risk to sage grouse because they can prevent the implementation of projects aimed at restoring or improving sage grouse habitat. Treatment methods can be prohibited and/or the cost become prohibitively expensive. Other issues that may hinder the initiating of projects are archeological compliance, Native American consultation, and Water Quality. The use of

herbicides and pesticides near streams, and or laws or regulations limiting the use of them may also impact projects targeted to protect sage grouse.

The Congress should re-evaluate suitability of the Clan Alpine WSA with respect to the current sage grouse planning effort. Amending the Land Use Planning Document through a Resource Management Plan in an effort to drop the WSA would benefit resource managers in their efforts to restore and manipulate habitats for sage grouse.

Conservation Goals

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Attempt to reduce the impacts from the laws, policies or regulations associated with WSA's by knowing and designing projects that take into account the restrictions and limitations in WSA's. Projects within the WSA will require more time to design and resources to implement, but may be necessary to improve and restore sage grouse habitat.

Conservation Objectives

1. The Bureau of Land Management should re-evaluate the suitability of the Clan Alpine WSA with respect to habitat management for sage grouse. Potential conflicts include the control or manipulation of mature/over-mature pinion juniper woodlands, restoration of decadent sagebrush habitat types, and the control of noxious weeds.
2. Over the next five years identify areas in the WSA for potential habitat protection or enhancement. All projects should take into account the restrictions and conflicts often associated with Wilderness Study Areas.
3. Identify all laws, policies, and regulations (and their component sections) that may conflict with the biological needs of sage grouse.
4. Determine the procedures needed to comply with these laws, policies, and regulations while developing optimal habitat for sage grouse.
5. Document irreconcilable conflicts and determine the appropriate government level and organization so conflicts can be addressed through the legislative and/or rule making process, removing as many barriers as possible.
6. This plan will be in compliance with non-impairment criteria for the WSA.
7. Should the Clan Alpine WSA be designated as Wilderness it is recommended that herding horses from a helicopter, pinyon/juniper control, manipulation of sagebrush habitats by chemical and or mechanical methods and the maintenance of exclosures be continued.

LIVESTOCK MANAGEMENT – LOW TO MODERATELY LOW RISK

Livestock grazing was rated as a low to moderately low risk to sage grouse in the Clan Alpine PMU. However, thru intensive grazing management and making adjustments to the current management of livestock, any areas of concern can be addressed on an annual basis by using the Adaptive Management Approach. Currently, upland habitats generally have a good understory of grasses and forbs. Meadow and riparian habitats that are not protected, generally do not have or provide sufficient cover (4-6 inches on average) for sage grouse during the mid to late summer brood rearing period. Several of the major riparian and meadow systems within the R-0 habitat in Cherry Valley have been excluded (thru fencing) from horse and livestock grazing. The construction of additional exclosures in Cherry Valley would help to protect important water sources and meadow habitats for sage grouse.

Wild horse populations within the PMU are currently at the low end of the AML. As long as the horse population is at the AML, the management of all grazing animals can be better assessed on an annual basis. Modifications to the existing terms and conditions can be made to adjust livestock grazing by using the adaptive management approach. Monitoring data must be collected and properly assessed to ensure that livestock are moved away from areas where utilization levels have been met.

There are several important meadow and spring sources that would benefit and improve in condition if protected. The Carson City Field Office of the BLM, NDOW and the livestock permittee will work together to design and implement the habitat enhancement projects to ensure that the projects are a benefit to both sage grouse and resource managers. All of the areas to be protected have been recurrent problems for managers and will protect and enhance critical sage grouse habitat. If in the future the vegetation within these protected areas becomes to overgrown and is thought to preclude or reduce use of the meadow by sage grouse, livestock will be used (low intensity, short duration) as a tool to create and maintain the meadows in a desired state for grouse, to meet specific seasonal needs. The size of the fenced area will decide the intensity and duration allowed and will require close attention to ensure that sage grouse seasonal requirements are met.

Conservation Goals

Over the next five-year period, make adjustments (if necessary) to the current grazing management system to ensure that the seasonal habitat requirements for sage grouse are met (using the adaptive management approach).

Conservation Objectives

1. Manage livestock utilization in nesting and early brood rearing habitat to leave sufficient herbaceous height to provide hiding cover for nests and young chicks. How this equates to an average utilization level is unknown and likely to vary widely across the PMU, depending on site potential and growth form of the sagebrush.
2. Utilization limits on riparian areas should leave at least about 4-6 inches of herbaceous material (on average) to provide sufficient hiding cover for late brood

rearing during the summer months. The increased herbaceous cover provides increased food plants for chicks and increases the amount of insects available to chicks in the first few weeks of life. The average of six inches in height will be considered the high end of what is beneficial to grouse. There will be areas with taller vegetation used for cover and loafing and areas that are more open to allow grouse to move within the herbaceous cover.

3. Over the next three-year period, identify important sage grouse habitat on public land that could benefit from a change in livestock grazing management, and the specific changes in management necessary. Work with the permittees to design and implement changes in grazing management to benefit grouse, while minimizing or eliminating adverse effects to the livestock producer. .
4. Over the next three years assess areas of private land in which to conduct habitat enhancement projects. Work with the landowner to assess areas on private lands to conduct sage grouse habitat enhancement projects. No private lands projects have been developed to date in this PMU.
5. When riparian vegetation height and structure in the exclosures exceeds the level considered optimal habitat for grouse, livestock may be used as a tool (low intensity, short duration) to create open areas for movement and feeding while maintaining the amount of cover necessary for brood rearing, and survival. The increased herbaceous cover provides increased food plants for chicks and increases the amount of insects available to chicks in the first few weeks of life. The NDOW and BLM will work with the livestock permittees in an effort to maintain optimal meadow habitat for grouse within these areas. Close monitoring of the grazing within the exclosure will be necessary to ensure that sufficient hiding and loafing cover for sage grouse and their brood's remains.

Monitoring:

1. The Bureau of Land Management (Carson Office) will monitor livestock grazing (utilization) to ensure sufficient herbaceous material is available to meet the seasonal requirements of sage grouse in nesting/early brood rearing, and late brood rearing habitat, respectively, at the appropriate time of year, to provide adequate hiding and/or thermal cover. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology may be the potential limiting factors.
2. The Carson City Field Office of the BLM should establish riparian utilization cages (minimum of two cages per year per pasture) in all allotments in the PMU. Utilization rates will be measured on major meadow and riparian systems on an annual basis in R-0 habitats. The monitoring is necessary in order to ensure adequate escape/loafing cover exists for sage grouse during mid to late summer. The herbaceous cover will also provide grouse with additional food plants and provide an environment where insects are available to chicks. The utilization will be monitored a sufficient number of times throughout the season of use to ensure that

adequate cover remains for sage grouse. Livestock will be herded away from the area once utilization levels have been met.

MINING – LOW RISK

There are several small sized mining operations in the Clan Alpine PMU. There is little or no current surface mining activity. The mining operations are operating at very low levels (prospectors or small operators) or are currently inactive. An increase in the amount of mining activity is possible with the increase in gold prices but is not expected to be a major factor in the PMU in the foreseeable future.

Conservation Goal

Minimize any adverse effects that future mining operations may have on sage grouse in the Clan Alpine PMU.

Conservation Objectives:

1. Identify those areas in the PMU where any mining activity (beyond staking of claims) is likely to have an adverse impact on sage grouse.

Monitoring

1. For the duration of this plan document annual mineral exploration and extraction activity in the Clan Alpine PMU. Every 5 years assess the direct and indirect effects (including cumulative) to sage grouse habitat.

MONITOR, RESEARCH AND EDUCATION – MODERATELY HIGH RISK

Population Biology

The sage grouse population in the Clan Alpine PMU is believed to be about 200 birds. An estimate for this population is extremely difficult due to the lack of population data for this PMU. There is only one currently active lek in the PMU. Two leks that were active in the early to mid 1990's do not appear to have had bird use in recent years. Continued monitoring of the leks will help to determine if the leks are still active.

Sage grouse population data for Churchill County are limited and large gaps exist. Some harvest and brood survey data are available from as early as 1949. The limited data suggest sage grouse populations in Churchill County have mimicked the west wide decline of sage grouse. Limited harvest and production data from the 1960's and early 1970's suggest population levels were higher than what is present today. Many long-time Churchill County residents believe sage grouse populations in the 1960's and early 1970's were larger than the numbers present today. The Churchill/Lander County and District (Sierra) wide data is provided in Appendix 1.

The first comprehensive aerial survey of leks in Churchill County was conducted in 1992. Lek surveys have been conducted on an annual basis since 1999. The following table shows the number of birds observed during ground and aerial surveys (Table 1.) Climatic conditions or other disturbances could impact survey results in any given year. The data should be analyzed over the long-term in an effort to determine trend.

Table 1.

Lek Name	# of Birds 1967	# of Birds 1975	# of Birds 1992	# of Birds 1999	# of Birds 2001	# of Birds 2002	# of Birds 2003*
Clan Alpine 1	NS	6+**	NS	0	NS	0	NS
Clan Alpine 2	NS	NS	3+**	NS	NS	0	NS
Clan Alpine 3	Unknown**	NS	0	NS	NS	0	NS
Clan Alpine 4	Unknown**	NS	0	NS	NS	0	NS
Clan Alpine 5	NS	NS	0	NS	NS	14**	8*
Clan Alpine 6	Unknown**	NS	0	NS	NS	0	NS

* Ground counts were conducted on select grounds in 2003.

** Year discovered

NS – Not Surveyed

The Clan Alpine Range is very well watered and the only leks that have been lost (to our knowledge) have been the leks believed to be lost due to highway construction and powerlines during the mid to late 1960's. The leks were located immediately adjacent to the highway and sage grouse were reportedly observed strutting on the highway for one or two years following its construction. Other historical leks from the same time period may have no use today due to the lower sage grouse densities that exist today. Pinyon juniper encroachment has been a slow yet methodical process and has invaded sage grouse habitats in Churchill County over the last century.

Very little information or data are currently known regarding the distribution, movement, and critical habitats of sage grouse in the Clan Alpine PMU. The North Central Planning group believes it is critical for the future management of these sage grouse populations that NDOW continue to learn more about them. More research and data collection is needed prior to implementing many of the management actions outlined in this plan. In order to best manage sage grouse in this PMU, more information is needed regarding important habitats and movement of grouse within the PMU. Locating additional leks and other important habitats will allow managers to design projects that will improve or protect specific areas that are critical for the survival of sage grouse that live in the PMU. The information collected will help to ensure that monies expended on projects are being spent in areas that will be the most beneficial to sage grouse.

Conservation Goals

Increase knowledge about sage grouse population size, lek sites, habitat use, and seasonal movement in the Clan Alpine PMU.

Conservation Objectives

1. Annually conduct aerial and ground surveys of established trend leks. Trend leks should be established and visited 3 or 4 times over the course of the breeding season to obtain the highest count of males and females.
2. For each of the next five years, expand both ground and aerial searches to identify additional leks that are believed to occur in the PMU.
3. The sage grouse hunting season will remain closed within this PMU until sufficient data demonstrate the population can support limited harvest (See Harvest and Poaching section for criteria).
4. Over the next five years, attempt to capture and radio telemeter 15 sage grouse. The capture of females will be the main emphasis. Continue to monitor the bird's movements over the life of the transmitters to help us learn more regarding important seasonal habitats and movements of sage grouse in the PMU.
5. The absence of annual wing data limits our knowledge about the population biology of sage grouse in the Clan Alpine Range. To obtain population level data brood surveys should continue to be conducted during the summer months to determine productivity and recruitment. Use of radio marked birds to help identify use areas will facilitate this step.

Monitoring

1. Monitor each radio-collared birds for up to two years. The data will help to determine whether the population is migratory or non-migratory, and may help find additional lek sites. Also, the study will help to better define critical nesting, brood rearing and wintering habitats. With all of the projects that will be proposed through this sage grouse planning process, it would be beneficial if NDOW could hire someone to conduct the monitoring of all collared birds statewide.
2. NDOW will continue to conduct brood surveys during the summer months in order to collect productivity and recruitment data for this population. Summer students may be used to collect some of this important information and help to make sure sufficient manpower is available to conduct the surveys. NDOW will establish routes for conducting counts and set specific time frames for the data to be collected each year.
3. Conduct both aerial and ground lek surveys on an annual basis and expand the search for new leks. NDOW will establish routes for conducting counts and set specific time frames for the data to be collected each year.
4. Continue to monitor other marking studies and data collection going on in adjacent PMU's in order to compare and better understand sage grouse populations from a metapopulation perspective.

PREDATION – LOW RISK

No predator control projects were recommended by the LACP at this time. If at some point in the future production and recruitment data suggest that predation may be impacting the population, then a control project may be initiated. No predator research has been conducted within this PMU but some studies have indicated that predators can have a significant impact on sage grouse populations under certain circumstances.

Coyote and bobcat hunting and trapping are popular in the Clan Alpine PMU.

Conservation Goals

None at this time

Conservation Objectives

None at this time.

Monitoring

1. Monitor sage grouse recruitment (chicks per hen) by conducting summer brood surveys in Cherry Valley and other riparian areas as necessary. If recruitment falls below that necessary to maintain the population for three consecutive years, then investigate whether predators may be having an impact on nesting success and survival of broods. Predator densities will have to be determined.

REALTY ACTIONS – MODERATE RISK

At least one historical lek within the PMU was believed to be lost due to the construction of utility lines/corridors and the construction of U.S Highway 50 between the Clan Alpine and Desatoya Ranges in the mid 1960's. The lek was immediately adjacent to the highway and the power lines were placed directly overhead of the lek.

One major power line traverses the southern end of the Clan Alpine Mountains. Several others skirt the PMU's major roads and give power to ranches located on the alluvial fans and valley bottoms. The old mining town of Wonder sits on the southwestern flank of the range. Some power lines and telephone lines are associated with the area.

It is believed that a reduction in the number of homesteads and ranches over the last one hundred years may have led to the loss of irrigated meadows and alfalfa fields that were once used by sage grouse. Many years ago stringer meadows were often irrigated and cut for hay. The irrigated meadows and fields provided sage grouse with additional summer brood rearing and loafing areas.

Risks associated with energy related projects, communication sites, transportation corridors, and urban development have all been assessed as to their risk to sage grouse

during this process (Risk Assessment Matrix, Appendix 1). The risks from energy development may increase in the future due to the recent increase in the development of alternative energy sources. No projects have been identified within the Clan Alpine PMU to date, but the potential for future development of geothermal power exists in the valleys. Wind generation projects are currently proposed for other PMU's in the State of Nevada. Woodland harvest for biomass is another concern.

Conservation Goals

Prevent the loss of sage grouse habitat due to any realty action.

Conservation Objectives

1. NDOW, BLM, USFS, other government entities, and the general public have an opportunity to review any new proposals for utility lines/corridors, energy related projects, communication sites, transportation corridors, and urban development through the NEPA process to make sure that these types of realty actions do not impact sage grouse or their habitats. Input into these types of realty actions will attempt to reduce or eliminate conflicts with sage grouse and their habitats.
2. Over the next five years determine whether there are areas in the PMU where there is potential to improve sage grouse habitat by restoring fields or meadows that were once irrigated.
3. Involve state and federal wildlife biologists and rangeland ecologists in the design of any proposed projects prior to NEPA consultation. This should ensure that concerns for sage grouse are addressed upfront and prevent last minute band-aid solutions.

Monitoring

1. Monitor proposed Realty Actions through the NEPA process as early in the process to reduce or prevent impacts to sage grouse and their habitats.

RECREATION

The North Central Local Planning Group determined that Recreation was not a risk factor in this PMU. The R-0 habitat in Cherry Valley is accessible by four-wheel drive or other off road vehicles but is not heavily used by recreational enthusiasts in the summer when sage grouse are present on the meadows. Most recreational activity occurs from October through November during the mule deer hunting season. In other areas of the PMU, access is limited due to the steep rocky topography. Sage grouse densities are generally very low in the PMU and any disturbances would more than likely be limited to only a small number of birds.

WILD HORSE AND BURRO MANAGEMENT – MODERATELY LOW TO MODERATELY HIGH RISK

Horse and burro numbers in the Clan Alpine PMU are currently at the low end of the AML. The Carson City Field Office of the BLM initiated a gather in order to protect the resource following the Twin Peaks Fire in 2000. The gather reduced horse numbers to the low end of the AML. However, due to the fact that horses are present yearlong and not managed (moved and herded from one area to the next) the planning group rated horses and burros as a slightly higher risk than livestock. The potential for the horse population to exceed AML in the future was rated by the planning group as a moderately high risk. Horse numbers prior to the gather (Twin Peaks Fire) in 2000 were well above the AML.

Conservation Goals

Maintain the wild horse population at a size that will increase the cover and production of perennial grasses and forbs sufficient to meet the desired seasonal habitat requirements of sage grouse (assuming site potential allows for this) in both the early brood rearing habitat, and the late brood rearing areas, respectively.

Conservation Objectives

1. Do not let the herd numbers increase above the Appropriate Management Level range of 619 – 979 horses.
2. The Carson City Field Office of the BLM will institute a gather once horse numbers exceed the AML.
3. Manage utilization in nesting and early brood rearing habitat to leave sufficient herbaceous height to provide hiding cover for nests and young chicks. The herbaceous cover also allows for insects and food plants needed for young sage grouse broods. How this equates to an average utilization level is unknown and likely to vary widely across the PMU, depending on site potential and growth form of the sagebrush. Horses contribute to the utilization of the vegetative resource and overall utilization must be monitored.
4. Utilization limits on riparian areas should leave about 4-6 inches of herbaceous material (on average) to provide sufficient cover for late brood rearing during the summer months. Taller herbaceous vegetation is likely to result in less sage grouse use. Shorter vegetation, at least where overland flow occurs could increase erosion and result in lower water tables and loss of the system. Horses contribute to the utilization of the vegetative resource and overall utilization must be monitored.
5. Over the next three-year period, identify and design projects needed to protect important water sources and meadows used by sage grouse on public land. Several spring sources in Cherry Valley have been identified for potential habitat improvement projects. Water sources will be fenced and water (not all) piped to a trough away from the source. The water delivery/transport system will ensure that excess water is piped back to the riparian for wildlife use and to ensure adequate

water remains to maintain the existing riparian. The North Central Planning Group realizes the benefits that these habitat protection and enhancement projects will provide to both sage grouse and resource managers. Horses contribute to the utilization of the riparian vegetation and overall utilization must be monitored.

6. Over the next three years assess areas of private land in which to conduct habitat enhancement projects. Work with the local landowners to develop private lands projects that will enhance sage grouse habitats and benefit the landowners. No private lands projects have been developed to date in this PMU. Some of the water sources are located on private ground and being used by livestock and horses.
7. Manage utilization in nesting and early brood rearing habitat to leave sufficient herbaceous material to provide hiding cover for nests and young chicks. The herbaceous cover also allows for an environment that increases insect availability and allows for increased food plants needed for young sage grouse chicks. How this equates to an average utilization level is unknown and likely to vary widely across the PMU, depending on site potential and growth form of the sagebrush. Horses are currently at the low end of the AML but still utilize the uplands and the valley bottoms. Utilization of the vegetative resource needs to be monitored a minimum of every three years.

Monitoring

1. The BLM will continue to monitor horse numbers using current aerial census techniques. The entire PMU should be flown on an annual basis to accurately census horse numbers.
2. The Carson City Field Office of the BLM will establish line intercept monitoring transects in nesting/early brood rearing habitats (R-0 habitats) by 2004 (Similar to BLM Winnemucca District protocol). The transects will be measured a minimum of every three year's; at the appropriate time of year to ensure sufficient herbaceous vegetation to provide escape and/or thermal cover for sage grouse. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology are the potential limiting factors for nest success.
3. The Carson City Field Office of the BLM should establish riparian utilization cages (minimum of two cages per year per pasture) in all allotments in the PMU. Utilization rates will be measured on major meadow and riparian systems on an annual basis in R-0 habitats. The monitoring is necessary in order to ensure adequate escape/loafing cover for sage grouse. The utilization will be monitored a sufficient number of times throughout the season of use to ensure that the utilization does not exceed the terms and conditions in the existing FMUD. Livestock will be herded away from the area once utilization levels have been met.

WILDLIFE MANAGEMENT / GRAZING

There are no identified risks for sage grouse from managing for other wildlife species.

MILITARY ACTIONS – LOW RISK

The Clan Alpine PMU resides under restricted airspace designated as a Military Operations Area, in support of the Navy's 13,000 mi² Fallon Range Training Complex (FRTC). Both fixed wing and rotary wing aircraft over fly the area intermittently at various altitudes.

Previous studies have concluded that the limited Navy training conducted resulted in either "no impact" or "minor and insignificant impact". Navy ground training consists of convoy traffic using existing roads and consists of three to four vehicles traveling at slow speeds (less than 15 miles per hour). Combat Search and Rescue (CSAR) Training also takes place in the area and is restricted to very few helicopter landings. CSAR training was fully assessed in BLM Environmental Assessment EA#98036. This document concludes; "Since the training would occur on any given site on a limited basis and over a short duration, impacts would be minor and would not be significant."

The development of electronic warfare sites (EW) and tracking instrumentation subsystem (TIS) sites was addressed in the Final Environmental Impact Statement, Proposed Fallon Range Training Complex Requirements, Naval Air Station Fallon, January 2000. This document fully assessed the impacts to sage grouse from several proposed activities and concluded that no impacts would result from implementation.

Navy training exercises have been blamed for starting fires that have occurred in surrounding areas. Flares used by the Navy during training exercises and the use of bombs and other ammunition near bombing ranges are also a concern. Fires in sagebrush habitat could destroy important habitats for sage grouse. Cheatgrass and mustard have invaded the lower elevations within the burned areas and have increased fire frequency.

Conservation Goal

Ensure that military activities on and above the PMU do not cause a decline in the sage grouse population through either habitat alteration or changes in behavior in response to military activities.

Conservation Objectives

1. Cooperate and coordinate with the Naval Air Station Fallon (U.S. Navy) to reduce potential disturbances in sage grouse habitat.
2. Provide the Navy with important information on critical habitats and seasons of use so that these areas can be avoided during training operations (sensitive areas).

3. The navy, to the extent possible, will schedule training missions over the PMU, which involve anti-missile defense flares, to periods with low fire danger, or move such missions to locations over valley bottoms with playas. The use of flares should be canceled on days wind speeds exceed, or are predicted to exceed 20 MPH. The navy and the Carson City Field Office of the BLM should coordinate these activities.

CLAN ALPINE

RISK FACTOR -- POOR HABITAT QUALITY	Potential Effects on Sage Grouse Habitat Requirements or Sage Grouse Biology	Potential Factors Related to Habitat Quality to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale										Temporal Scale					Risk Type					
			Present/Absent (Y/N)	Individual (s)	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct (on birds)	Indirect	Controllable	Non-controllable	Predictable
	Lack of Desired Forbs		Y			2	1					2	2	2	2	3		Y		Y		Y	
	Lack of Perennial Herbaceous Cover						2					2	2	2	2	3		Y		Y		Y	
	Gaps Present Between Ground and Most Sagebrush Canopies (Umbrella Effect)		Y				2					2	2	1	2	2	2	Y			Y	Y	
	Most Sagebrush Canopies Have Sparse Leaves and Stems		Y				2					2	2	1	2	2	2	Y			Y	Y	
	Overmature Sagebrush in Extensive Monocultures		Y				2					2	2	1	2	2	2	Y			Y	Y	
	Poor Seed Production for Sagebrush		Y				1					2	2	1	2	2	2	Y			Y	Y	
	Poor Mix of Sagebrush Range Sites		N																				
	Abundant Annual Grasses		N																				
	Noxious Weeds Present		Y	1				1				1	2	2	1	1			Y	Y		Y	
	Lack of Insects		N																				
	Sagebrush Too Tall for Season of Use		N																				
	Sagebrush Too Short for Season of Use		N																				
	Sagebrush Cover too High for Season of Use		Y				2					2	2	1	2	2		Y		Y		Y	
	Sagebrush Cover to Low for Season of Use		N																				
	R0 on < 40% of PMU		Y				2					2	2	1	1	1	1	Y	Y		Y		
		<ul style="list-style-type: none"> Sagebrush Size and Shape Arrangement of Habitat Patches Homogeneity of Vegetation Plant Community age Reproduction Potential of SB Seasonal Uses by Grouse Presence of Undesired Species Variety of Plant Species 																					
Explanations/ Comments/ Summary	Habitat Protection projects in Cherry Valley will help to improve grouse habitat. Several spring sources would improve in condition if protected. Twin Peaks Fire may in the long-term benefit grouse once sagebrush returns to the site. However, in the short-term low-density sage grouse habitat was lost in the fire There may be increased costs and limitations on projects that occur in WSA's. There are areas of cheatgrass that occur in the PMU but they are located in areas that have very low densities of sage grouse and are not considered widespread or abundant. . Potential risks in the future for cheatgrassx to expand following fire (See Fire Too Much).																						

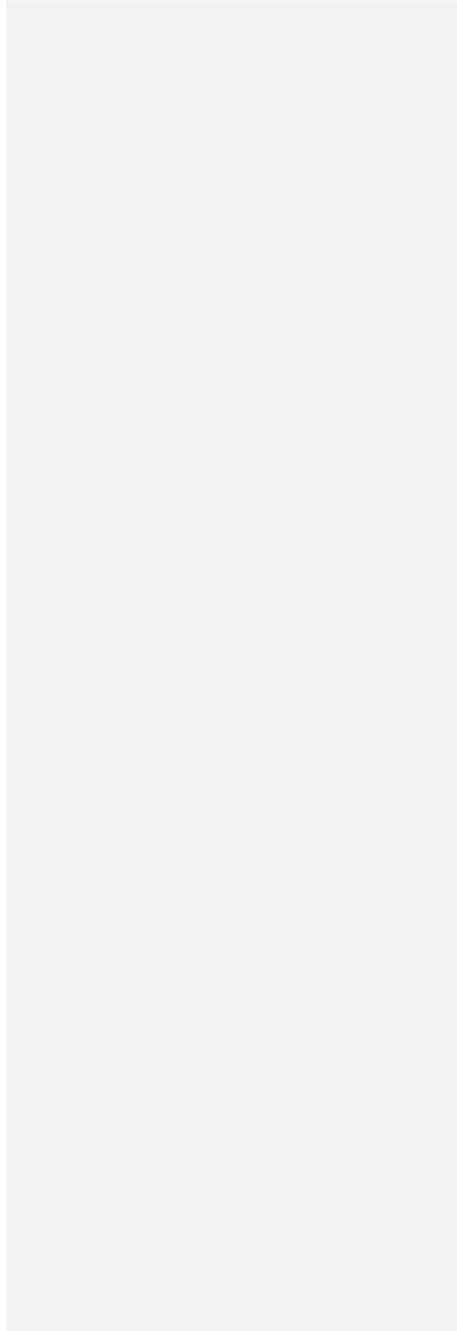
Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Grazing Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Excessive Herbaceous Height in Meadows (>6-8 in) on average	Livestock Management/ Grazing	Overtime, excessive vegetation inside the enclosures may inhibit grouse use. Livestock can be used as a tool to create (low intensity /short duration) optimum meadow habitat for grouse.			3						3	3	3	3	3		Y		Y		Y		
Sagebrush Encroachment in Meadows from Overgrazing				1							1	1	U	1	1		Y		Y		Y		
Water Sources Surrounded by Substantial Bare Ground		N/A		1							1	1	1		1		Y		Y		Y		
Inadequate Access to Water		N/A																					
Loss/lack of Herbaceous Cover				2							2	2	1	2	2	2	Y		Y		Y		
Loss/lack of Desired Forbs				1							1	1	1	1	1		Y		Y		Y		
Loss / Lack of Grass Production				1							1	1	1	1	1		Y		Y		Y		
Loss / Lack of Forb Production				1							1	1	1	1	1		Y		Y		Y		
Trampling of Nests		N/A																					
Insufficient Herbaceous Stubble Height				1							1	1	1	1	1		Y		Y		Y		
Reduce / Prevent Access to Meadows or Other Critical Habitat																							
			<ul style="list-style-type: none"> Management Facilities Concentration Points Vegetation Manipulations Season of Use Duration of Use Utilization level Drought Management Strategies Type of Animal 																				
Explanations/ Comments/ Summary																							

Risk/Limitation to the Bird Potential Effects on Grouse Biology and Factors that May Contribute to Increased Predation	Ecological Process, Management Action, or Land Use	Potential Factors Related to Predation to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Spatial Scale				Temporal Scale					Risk Type											
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Higher Predator Density	Predation																						
Loss of Nests / Eggs																							
High Predation Rate for Chicks																							
High Predation Rate for Juveniles																							
High Predation Rate for Adults																							
Contributing Factors are / may be:																							
Insufficient Hiding Cover																							
Depleted Resources (must Spend More Time Foraging)?																							
Habitat Quantity/Quality Force Grouse to Concentrate in a Few or Small Areas.																							
Early Movement to Meadows to obtain nutritious feed (can also be a drought effect)																							
		<ul style="list-style-type: none"> • Predator Numbers • Predator Density • Interactions with Habitat Quality and Quantity • How Changes in Grouse Behavior may Affect Predator Success • Potential Interactions with Weather 																					
Explanations/ Comments/ Summary	No predator control projects are recommended at this time. If in the future, high predator densities are thought to be a limiting factor to the sage grouse population, predator control projects may be initiated using the adaptive management approach. Predator control projects would also need to be tied back to habitat condition issues regarding the amount of herbaceous cover surrounding nests and the height of vegetation on meadow and riparian (brood rearing) areas. Also, the trend of the sage grouse population will need to be monitored (lek counts and brood surveys).																						

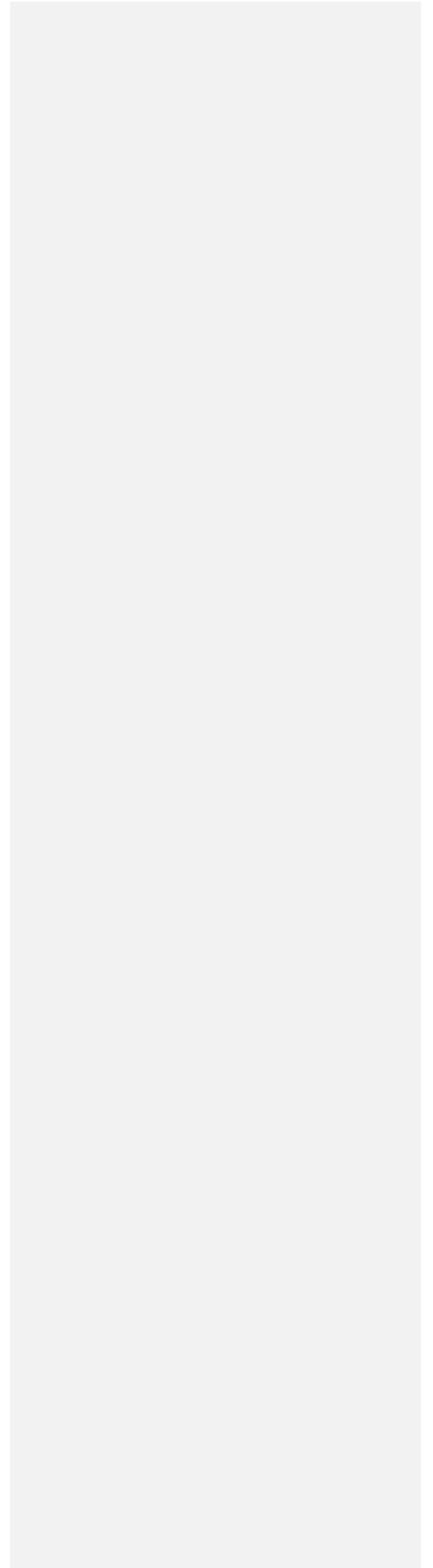
Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Recreation to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale				Risk Type							
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting/Early Brood	Summer/Late Brood	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Loss of Water Sources	Recreation - Direct Effects	N/A																					
Loss of Leks		N/A																					
Loss of Sagebrush Habitat		N/A																					
Loss of Meadows / Riparian		N/A																					
Noise / Activity Prevent Use of Nearby Water	Recreation - Indirect Effects	N/A																					
Noise / Activity Prevent Use of Nearby Leks		N/A																					
Noise / Activity Prevent Use of Nearby Nesting Areas		N/A																					
Noise / Activity Prevent Use of Nearby Riparian Habitat		N/A																					
Higher Predator Density		N/A																					
-Increase Avian Perch Sites		N/A																					
-Increase Predator Food Sources		N/A																					
Increase Potential for Fires																							
		<ul style="list-style-type: none"> • ORV's • Developed Sites or Dispersed • Concentration Points • Road Network • Frequency, Intensity, and Season of Activity • Fire Potential • Establishment of Weeds 	<p>Access to Cherry Valley is fairly good and recreational activity in the area can be high during certain times of the year. However, highest recreational activity occurs during October and early November (deer season) when birds are widely distributed. Some camping occurs during the summer months but the area is large enough and bird densities are low enough that impacts are thought to be very low or non-existent. Vehicle access to other areas is limited due to the steep topography of the area. ATV use off of existing two-track roads is a concern.</p>																				
Explanations/ Comments/ Summary	Not a great amount of recreational use. Access over the entire PMU via vehicle is limited.																						

Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use Evaluated	Potential Factors Related to Wildlife Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird										Temporal Scale					Risk Type							
			Spatial Scale					Temporal Scale					Risk Type												
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable		
Lost / Limited Access to Water	Wildlife Management / Grazing																								
Loss / Lack of Forbs																									
Loss / Lack of Shrubs																									
Shrub Cover To High																									
Grasses in Meadows to Tall																									
Hunter Harvest too High																									
Predation Losses High																									
- Avian																									
- Mammalian / Reptilian																									
Shrubs to Tall																									
Trampling of Nests																									
Insufficient Herbaceous Stubble Height																									
			<ul style="list-style-type: none"> Impacts of T&E Species Mgmt Location of Developments and Infrastructure Habitat Manipulations for Wildlife Hunting Pressure or Poaching Management of Other Species Introduced Species Wildlife Concentration Points Grouse Population Cyclic 																						
Explanations/ Comments/ Summary		Mule deer and bighorn densities are low and impacts by wild free roaming wildlife are generally so low that utilization of the vegetation cannot be measured.																							

Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related toto Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type					
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable
Military Impacts							1				1	1	1	2	1	1	1	1	1		1	
Explanations/ Comments/ Summary																						

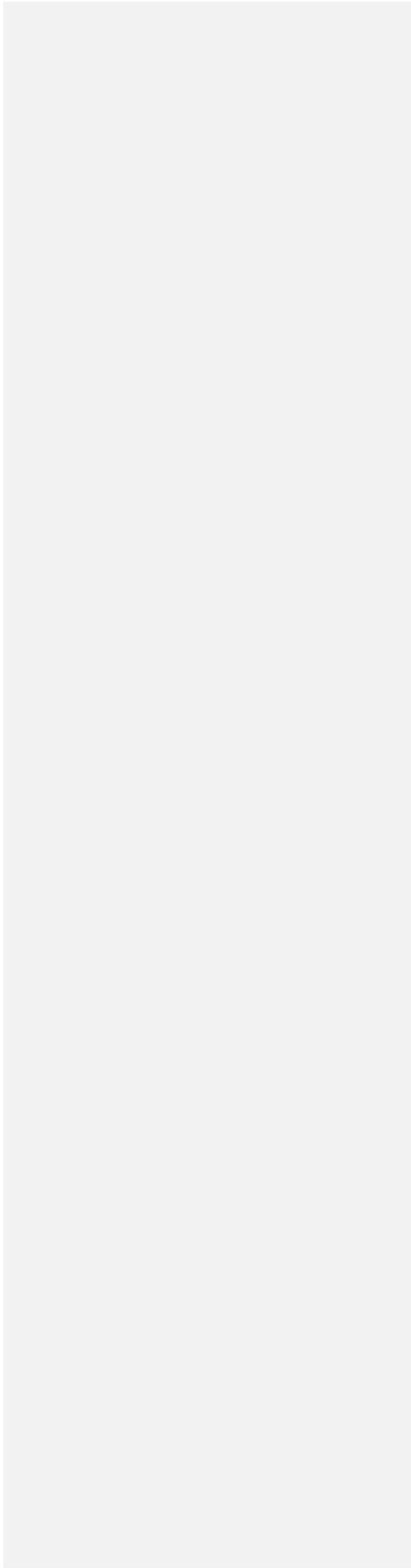


**DESATOYA POPULATION MANAGEMENT UNIT PLAN
NORTH CENTRAL LOCAL CONSERVATION PLANNING AREA**



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DESATOYA POPULATION MANAGEMENT UNIT

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SUMMARY

The Desatoya Sage Grouse Population Management Unit (PMU) encompasses approximately 800 square miles of sage grouse habitat in eastern Churchill and western Lander Counties. The PMU has approximately 3 percent private land and 97% public land administered by the Bureau of Land Management. There are five private landowners in the Desatoya PMU. The population management unit is bounded on the north by the northern portion of the New Pass Range and on the west by Edwards Creek Valley, Grayback and the Broken Hills. The Churchill, Mineral, Lander, and Nye County lines bound the PMU on the south and Smith Creek and Antelope Valleys make up the eastern boundary.

The elevation varies from approximately 5,000 feet in the valleys to 9,973 feet at Desatoya Peak. Annual precipitation ranges from approximately 5 inches at the bottom of the valleys to 16 inches at higher elevations.

Comment [AU5]: Does this PMU go to the Valley bottoms or just the upper alluvial fans.

Vegetation includes a mixture of sagebrush ecological sites at the lower elevations, Pinion-Juniper woodlands at the mid-elevations and mountain big sagebrush and low sagebrush ecological sites at the upper elevations.

In recent years more information has been learned regarding important lek sites and the distribution of sage grouse within the PMU. Currently, there are nineteen leks that have been identified within the PMU. Two new leks were discovered in the spring of 2003. Desatoya 18 (new) had a high count of 32 birds (28 males and 4 females) in attendance and Desatoya 19 (new) had 35 birds (29 males and 6 females) counted. The two leks are an important discovery and will help resource managers better understand the important habitats and movements of sage grouse in the PMU.

Nine of the nineteen leks that have been identified were located during the intensive 1992 aerial survey. Ten of the leks have been discovered over the last few years during ground and aerial surveys. The continuous identification of new leks in recent years strongly suggests that additional leks exist. A few of the important winter and brood rearing habitats have been generally defined. Very little is known about which areas in the PMU are used for nesting and early brood rearing. Sage grouse are widely distributed throughout the population management unit; however, some areas in the PMU appear to have a higher density of birds than do other areas. Also, some areas appear to be used only at certain times of the year (New Pass Range). Bird movement between adjacent PMU's is thought to occur but has not been documented.

Nevada Division of Wildlife biologists conducted a qualitative population viability analysis that suggests there is a low probability of extirpation in the next 20 years. Biologists feel the sage grouse population in the Desatoya Range is part of a much larger metapopulation. Movement of sage grouse and genetic mixing between this and other PMU's may not occur on an annual basis but is believed to be the reason many small populations of grouse continue to persist.

Comment [AU6]: Need to verify this

Since the mid 1970's the sage grouse population in the Desatoya Range has experienced a downward trend. However, over the last few years the population trend has been stable to slightly increasing at a lower level. Harvest and production data from the 1950's thru the 1970's is limited; however, the number of birds classified during surveys and the number of birds harvested during various open hunting seasons would indicate higher population numbers than what is estimated to be present today. Interviews with long time residents of Churchill County also indicate higher bird numbers during the 1960's to mid 1970's. The short-term trend is based upon recent brood and lek survey data. In 2002, biologists classified one hundred and forty-seven birds while conducting brood surveys in the Desatoya PMU. The sample provided an average ratio of 3.1 chicks per hen. The larger sample size is mostly attributable to greater effort expended on brood surveys and the development of new survey routes. Lek counts on the established trend leks have shown a stable trend in recent years (Table 1.)

The sage grouse hunting season within the Desatoya PMU has been closed since 1999. In general, hunting seasons in Churchill and Lander Counties were conservative during the 1950's, more liberal in the 1960's and early 1970's, and very conservative (when open) between 1973 and 1999. The timing of seasons has also changed over the years with an open hunting season in mid-August in 1950, and September openers between 1952 and 1984. In 1985, the NDOW moved the opening date for most sage grouse hunting seasons to early to mid-October.

HABITAT QUALITY – MODERATELY LOW TO MODERATE RISK

A qualitative risk assessment has concluded there is a low-moderate risk to all sage grouse throughout the PMU from a lack of desired forbs and desired perennial herbaceous cover. Risk from these conditions is considered moderate in both nesting/early brood rearing habitat and late brood rearing habitat. This risk is expected to continue into the future, given current management actions and ecological processes.

There is a moderate risk to sage grouse from extensive monocultures of mature sagebrush. These monocultures are believed to have a moderate risk to all sage grouse in the PMU because they occur across multiple watersheds (but not all of the PMU). Their extent is sufficient to reduce the amount of habitat with desired amounts of both sagebrush and perennial herbaceous species in the understory. This risk is expected to continue into the foreseeable future, particularly in the early brood and late brood rearing habitat.

There is a current moderately high risk due to the loss of sagebrush-covered rangelands from expanding pinyon juniper woodlands. This expansion is believed to be sufficiently widespread to affect all birds in the PMU, under current management programs this risk is expected to continue into the foreseeable future, increase to moderately high on nesting/early brood rearing habitat and remain a moderate risk on the late brood rearing habitat. Pinyon Juniper is expected to expand into sage grouse winter range in the future but is currently considered a moderately low risk.

The few fires that have occurred within the Desatoya PMU have been fairly small in size and have not seriously impacted sage grouse habitat. However, the potential for a large fire

is considered a moderate risk. Fire plans should be amended to protect important sage grouse habitats (R-0 and R-2) under a “full suppression” management strategy. Rehabilitation of the burned areas or other disturbed sites with sagebrush, grasses and forbs beneficial to sage grouse is vital. The potential for green stripping projects should also be explored in an effort to protect existing sagebrush habitats.

Livestock within the Desatoya PMU are managed under a rotational grazing management system. Upland habitats are generally in fair to good condition with a good understory of grasses and forbs. Riparian and meadows systems within the PMU are generally in fair condition, but in most cases do not meet the hiding/escape cover needs for sage grouse.

There are several water tanks and troughs that are located immediately adjacent to spring sources and riparian areas. Some of these spring sources are on private land and the water rights have been adjudicated to the landowners. Moving the tanks and troughs away from the spring sources and riparian areas would help to lessen impacts by both livestock and horses. Some of the spring sources may need further protection (fencing).

Sage grouse habitat improvement projects have been initiated on both public and private lands within the Desatoya PMU. The Porter Canyon (private land) project was proposed by the Hendrix family and Duane Coombs (Ranch Manager for the Hendrix) who own and manage the Smith Creek Ranch on the eastern slope of the Desatoya Range. Initially, the stinger meadows will be fenced (Completed December 2003) to allow for protection and restoration of the riparian areas. NRCS has been tasked with drafting a plan (by the end of 2004) for the area aimed at enhancing habitat for sage grouse. Pinyon juniper removal and thinning, installation of rock gabions to prevent further erosion and reseeding areas are just some of the treatments proposed to enhance the area for sage grouse.

The Carson City District of the BLM, NDOW and the Smith Creek Ranch cooperated in the design and locations for the proposed meadow and spring protection projects in Topia Creek and Smith Creek. The projects will help both sage grouse and resource managers. The necessary clearances to build the fencing projects have been finalized. The BLM is expected to begin construction of the fencing projects in 2004 and 2005.

Invasive weeds are present in the PMU but are largely point infestations in individual watersheds. While currently a low risk the future risk is expected to increase. Annual grasses have a moderate potential to cover much of the PMU, potentially increasing fire frequency and size, and the persistence of sagebrush over large areas. Noxious weeds are considered a moderate long-term risk, particularly in meadows and riparian areas used as late summer brood rearing habitat.

Sagebrush cover is thought to be too high in some areas of the PMU. The current risk is considered moderate, and is expected to continue into the foreseeable future, especially on early brood rearing and late brood rearing habitat. There is not a widespread problem for insufficient sagebrush cover, but there is a moderate risk for this to occur in the future, particularly on winter habitat. The most likely cause is increased fire frequency and expansion of annual grasses.

Conservation Goals

Protect and enhance the quality of sage grouse habitat in the Desatoya PMU through the implementation of management actions outlined in this plan.

Conservation Objectives

1. Over the next five years the Bureau of Land Management will make the necessary adjustments in the management of livestock to ensure that the seasonal habitat requirements of sage grouse are met. An upward trend in sage grouse habitat quality (determined by monitoring) will be used to determine whether the necessary improvements in habitat condition are being made. Adjustments in the grazing management of livestock will be made using the adaptive management approach.
2. Over the next five years, map areas of monotypic sagebrush to help identify areas that would benefit from mechanical or prescribed treatments. Projects will be designed to create a mosaic of different age classes of sagebrush and increase the amount of herbaceous material for the benefit of sage grouse. BLM, NDOW and the livestock operator will work together to ensure all parties have input into the project's design. Mechanical treatments with as little disturbance to the soils are the preferred methodology in areas prone to cheatgrass invasion. The type of treatment and number of acres to be treated will be determined when areas for treatment are better defined.
3. Over the next five years document the amount of pinyon juniper encroachment through the use of aerial photographs and other mapping sources to help identify areas for future treatment. Protection of important R-0 and R-2 habitats should be a priority.
4. ***Aggressively rehabilitate sagebrush habitat that is burned or otherwise disturbed. Seeding programs should occur in the fall or early winter (by January 15) immediately following the fire. Seed mixtures will vary depending on the site but will include species of sagebrush (when sagebrush is unlikely to reestablish on its own in 5-10 years), perennial grasses, and forbs that benefit sage grouse, and have a good chance for becoming established.***
5. Over the next three-year period, identify and map areas in the PMU that currently have invasive weeds and take actions to control/eradicate the weeds with herbicides. The BLM is currently attempting to identify these areas and taking the necessary steps to eradicate the weeds.
6. Over the next two years, amend the Carson City Districts (BLM) fire plan to call for the "full suppression" of wildfires in R-0 and R-2 sage grouse habitats. Due to the likelihood of cheatgrass invasion and the loss of sagebrush habitats from fire, prescribed burns shall be analyzed on a case-by-case basis to ensure that important sagebrush habitats are protected and that any proposed burn will either be neutral or enhance sage grouse habitat.

7. Over the next five-year period, BLM (Carson District), NDOW and other parties will determine whether a green stripping project in the Eastgate Hills (site that has burned several times over the past 10 to 15 years and has been invaded by cheatgrass and mustard) would be an effective treatment in terms of cost and meeting the objective to protect the surrounding sagebrush habitats from future wildfires. If it is determined that the treatment has a high potential for success and would help to protect critical sage grouse habitat, then proceed with the project and implement by 2008.
8. Over the next ten-year period, contain and eventually decrease the locations with cheatgrass and mustard. Continue to investigate methods to rehabilitate areas dominated by cheatgrass in an effort to restore these important habitats.
9. Remove water tanks and troughs away from numerous spring sources and riparian areas by 2006. Many of the water sources are located on private land and the water rights have been adjudicated to the permittee. The troughs and tanks will be moved to an upland site away from the spring or riparian area and any excess water piped back to the riparian. The action will improve the condition of these important water sources and riparian areas for sage grouse. Additional fencing of the spring sources may be required.
10. Construct the BLM proposed riparian protection projects in Smith and Topia Canyons by 2004. The projects are designed to protect and restore critical meadow and riparian habitats. The North Central Planning Group realizes the benefits that these habitat protection and enhancement projects will provide to both sage grouse and resource managers. The feasibility of these projects to be implemented has been discussed with all parties involved.
11. Design and implement sage grouse habitat enhancement projects in the Haypress Meadows area by 2006. The projects are aimed at enhancing critical sage grouse upland and meadow habitats (R-0). The BLM, NDOW and the livestock operator will work together in the design of the project to ensure that the movement or management of livestock within the allotment will not be impacted.
12. Vegetation within a few of the existing riparian enclosures (Edwards Creek) exceeds the optimal vegetative height for sage grouse. It is believed that grouse use of these riparian areas may have declined due to the lack of open areas for feeding and the difficulty for grouse to move within the thick herbaceous cover. The NDOW and BLM will work with livestock permittees in an effort to create optimal meadow habitat for grouse within these fenced areas. Ample vegetative cover will be left to provide quality sage grouse brood rearing and hiding cover.
13. Design and implement the private lands habitat enhancement project in Porter Canyon by 2004 (Proposed by the Hendrix family who own the Smith Creek Ranch). Initially, the meadow and riparian areas will be fenced (December 2003) and a plan is currently being drafted by NRCS to improve both riparian and upland habitats for sage grouse. Proposed treatments for the yet to be completed plan

include pinyon juniper control, erosion control, and the reseeded of areas following treatment. The project is expected to take several years to fully implement.

Monitoring

1. The Carson District of the BLM will establish line intercept monitoring transects in nesting/early brood rearing habitats (R-0 habitats) by 2004 (Similar to BLM Winnemucca District protocol). The transects will be measured a minimum of every three year's at the appropriate time of year to ensure sufficient herbaceous vegetation to provide escape and/or thermal cover for sage grouse. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology are the potential limiting factors for nest success.

HABITAT QUANTITY – LOW TO MODERATELY HIGH RISK

There is a current moderately high risk due to the loss of sagebrush-covered rangelands from expanding pinyon-juniper woodlands. This expansion is believed to be sufficiently widespread to affect all birds in the PMU, under current management programs this risk is expected to continue into the foreseeable future, increase to moderately high on nesting/early brood rearing habitat and remain a moderate risk on the late brood rearing habitat. Pinyon juniper is expected to expand into sage grouse winter range in the future but is currently considered a moderately low risk.

There is a moderate risk to sage grouse from extensive monocultures of mature sagebrush. These monocultures are believed to have a moderate risk to all sage grouse in the PMU because they occur across multiple watersheds (but not all of the PMU). Their extent is sufficient to reduce the amount of habitat with desired amounts of both sagebrush and perennial herbaceous species in the understory. This risk is expected to continue into the foreseeable future, particularly in the early brood and late brood rearing habitat.

Livestock within the Desatoya PMU are managed under a rotational grazing management system. Upland habitats are generally in fair to good condition with a good understory of grasses and forbs. Riparian and meadows systems within the PMU are generally in fair condition, but in most cases do not meet the hiding/escape cover needs for sage grouse.

At this time there is a moderate risk to many birds in the PMU from the loss of meadow habitat in multiple drainages. In some areas sagebrush has encroached into meadow habitats due to the dropping of the water table. Future risks are expected to decline due to the management actions outlined in this plan. By using the adaptive management approach, areas of concern will be addressed on an annual basis and adjustments in management made to improve the condition of these important habitats.

A few historical leks have been lost due to power lines and highway construction, but this is not believed to have adversely impacted the population at the PMU scale. The risk from this loss is considered low. Habitat Fragmentation from powerlines and other risks such as highway construction have not been determined through telemetry or marking studies.

Risks associated with Realty Actions have been rated as a low risk (currently) in the Desatoya PMU. The recent increase in energy related exploration and development could increase the risks associated with Realty Actions.

The loss of sagebrush covered habitat from fires, seedings, or conversion to annual grassland is currently considered a low risk, and restricted to a few isolated points in the PMU. The future risk, given current management direction is expected to rise; however, it has the potential to increase considerably (to moderate) if long-term management actions are not implemented to reduce fire potential/and or the spread of annual grasses. Green stripping projects may be looked at to protect sage grouse habitat from future wildfires. Rehabilitation of the burned or disturbed areas is critical and must be accomplished during the winter following the disturbance.

Invasive weeds are present in the PMU but are largely point infestations in individual watersheds. While currently a low risk the future risk is expected to increase. Annual grasses have a moderate potential to cover much of the PMU, potentially increasing fire frequency and size, and the persistence of sagebrush over large areas. Noxious weeds are considered a moderate long-term risk, particularly in meadows and riparian areas used as late summer brood rearing habitat.

Conservation Goals

Manage for no net loss of sage grouse habitat.

Conservation Objectives

1. Over the next five years, map areas of monotypic sagebrush to help identify areas that would benefit from mechanical or prescribed treatments. Projects will be designed to create a mosaic of different age classes of sagebrush and increase the amount of herbaceous material for the benefit of sage grouse. BLM, NDOW and the livestock operator will work together to ensure all parties have input into the project's design. Mechanical treatments with as little disturbance to the soils are the preferred methodology in areas prone to cheatgrass invasion. The type of treatment and number of acres to be treated will be determined when areas for treatment are better defined.
2. Over the next five years document the amount of pinyon juniper encroachment through the use of aerial photographs and other mapping sources to help identify areas for future treatment. Protection of important R-0 and R-2 habitats should be a priority. The plan being developed for Porter Canyon is proposing pinyon juniper thinning and removal as one of the treatments to improve sage grouse habitat in the Desatoya PMU.
3. Over the next five years, protect and restore riparian and meadow habitats within the PMU. Implement projects outlined in this plan to help restore important meadow habitats for sage grouse. Specific projects are outlined under the Livestock Management and Wild Horse and Burro sections of this plan.

4. Over the next five years, the BLM will manage livestock within the PMU to meet the seasonal habitat requirements of sage grouse. Future risks are expected to decline due to the management actions outlined in this plan. By using the adaptive management approach, areas of concern will be addressed on an annual basis and adjustments in management made to improve the condition of these important habitats. BLM will establish monitoring cages and transects in important meadow and upland habitats to monitor utilization by livestock.
5. Through the NEPA process, evaluate the risk of all Realty Actions that may have an impact on sage grouse or sage grouse habitat. Avoid any loss of sage grouse habitat from Realty Actions. Mitigation is required for any loss of sage grouse habitat.
6. Continue to aggressively rehabilitate burned areas by using both native and non-native plant species. Crested Wheatgrass may be the best choice in areas with a high probability for cheatgrass invasion. Once the wheatgrass has become established then a second treatment to restore the sagebrush component will be necessary.
7. Over the next three-year period, identify and map areas in the PMU that currently have invasive weeds and take action to control/eradicate the weeds with herbicides. The BLM (Winnemucca and Carson Districts) is currently identifying these areas and taking steps to eradicate the weeds.
8. Over the next two years amend the Carson City Districts (BLM) fire plan to call for “full suppression” in R-0 and R-2 sage grouse habitats. The suppression is needed to protect important sage grouse habitats from future wildfires. Due to the likelihood of cheatgrass invasion and the loss of sagebrush habitats from fire, prescribed burns shall be analyzed on a case-by-case basis to ensure that important sagebrush habitats are protected. Mechanical treatments are the preferred methodology in areas where cheatgrass invasion is likely.
9. Over the next five-year period, BLM (Carson District), NDOW and other parties will determine whether a green stripping project in the Eastgate Hills (site that has burned several times over the past 10 to 15 years and has been invaded by cheatgrass and mustard) would be an effective treatment in terms of cost and meeting the objective to protect the surrounding sagebrush habitats from future wildfires. If it is determined that the treatment has a high potential for success and would help to protect critical sage grouse habitat, then proceed with the project and implement by 2008.

Monitoring

1. The Carson District of the Bureau of Land Management will monitor livestock grazing (utilization) to ensure sufficient herbaceous material is available to meet the seasonal requirements of sage grouse in nesting/early brood rearing, and late brood rearing habitat, respectively, at the appropriate time of year, to provide adequate hiding and/or thermal cover. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession)

and whether herbaceous growth or shrub size and morphology are potential limiting factors for nest success.

FIRE (TO MUCH) – LOW RISK

The few fires that have occurred within the Desatoya PMU have been fairly small in size and have not seriously impacted grouse habitat. The potential for a large fire to take place in the PMU is considered moderate. Green stripping projects may be looked at to protect sage grouse habitat from future wildfires.

Pinyon Juniper is the dominant vegetation type at the mid elevations of the Desatoya and New Pass Ranges. The lack of wildfire over the last one hundred years has led to the invasion of Pinyon Juniper (PJ) into important sage grouse habitats. However, with the high potential for cheatgrass invasion, prescribed fire to control PJ encroachment should only be attempted where this potential does not exist. The North Central Local Planning group feels that the safer alternative is to use mechanical or chemical treatments to control or eliminate encroaching trees. Types and methods of the treatments and the amount of acreage to be treated will be determined at a later date once specific sites have been determined.

Conservation Goals

Prevent the further loss of sagebrush habitat and continue to aggressively rehabilitate burned areas following fire.

Conservation Objectives

1. Over the next two years amend the Carson City Districts (BLM) fire plan to call for “full suppression” in R-0 and R-2 sage grouse habitats. Full suppression is necessary to protect the existing sagebrush habitat from future wildfires. Due to the likelihood of cheatgrass invasion and the loss of sagebrush habitats from fire, prescribed burns shall be analyzed on a case-by-case basis to ensure that important sagebrush habitats are protected. Mechanical treatments are the preferred methodology in areas where cheatgrass invasion is likely. The types of mechanical treatments and number of acres to be treated will be determined once the areas for treatment have been identified and the goals and objective for the particular site have been determined.
3. Smaller prescribed fires (< 300 acres and in a mosaic pattern) may be allowed if the risk for cheatgrass invasion is minimal. Efforts to control or manipulate Pinyon Juniper or over mature sagebrush stands must consider the risk of cheatgrass invading the site once the area has been disturbed. Mechanical treatments are the preferred alternative in areas that have a high probability of cheatgrass invasion (below 7000 feet). The types of mechanical treatments and number of acres to be treated will be determined through the use of aerial photos and other mapping sources.

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3. Over the next five-year period, BLM (Carson District), NDOW and other parties will determine whether a green stripping project in the Eastgate Hills (site that has burned several times over the past 10 to 15 years and has been invaded by cheatgrass and mustard) would be an effective treatment in terms of cost and meeting the objective to protect the surrounding sagebrush habitats from future wildfires. If it is determined that the treatment has a high potential for success and would help to protect critical sage grouse habitat, then proceed with the project and implement by 2008.
4. The BLM and NDOW will continue to aggressively rehabilitate burned areas by using both native and non-native plant species. Currently, the Winnemucca and Carson Districts of the BLM and NDOW work cooperatively in the planning and strategies for rehabilitation efforts within the North Central Planning Area. It is apparent that the use of non-native species such as Forage Kochia and certain wheatgrasses may be a tool that is needed to out compete cheatgrass and other invasive weeds. The Crested Wheatgrass may be the best choice in areas with a high probability for cheatgrass invasion. Once the wheatgrass has become established then a second treatment to restore the sagebrush component will be necessary.
5. Continue to investigate the most cost effective way to restore sagebrush habitats that have been replaced by cheatgrass and other annual grasses following wildfire. Initiate projects to rehabilitate these areas once a cost effective treatment to restore large acreages has been found.

Monitoring

1. The BLM should establish monitoring transects in areas that have been reseeded in an effort to learn which treatments or seed mixtures are the most successful in restoring sagebrush habitat. The data collected will be valuable in the planning of future projects (Adaptive Management Approach).

FIRE (TO LITTLE) – MODERATE RISK

The few fires that have occurred within the Desatoya PMU have been fairly small in size and have not seriously impacted grouse habitat. The potential for a large fire to take place in the PMU is considered moderate.

Pinyon Juniper is the dominant vegetation type at the mid elevations of the Desatoya and New Pass Ranges. The lack of wildfire over the last one hundred years has led to the invasion of Pinyon Juniper into sage grouse habitats (summer, nesting and early brood rearing habitats). However, with the high potential for cheatgrass invasion, prescribed fire to control PJ encroachment should only be attempted where this potential does not exist. The North Central Planning group feels that the safer alternative is to use mechanical or chemical treatments to control or eliminate encroaching trees.

The lack of fire has also led to over mature sagebrush stands in certain areas of the PMU. These stands have become less productive and no longer meet the seasonal requirements of sage grouse. In some areas sagebrush has encroached into meadow habitats due to the dropping of the water table.

Conservation Goal

Increase the quality and quantity of sage grouse habitat in the PMU by implementing projects to restore and enhance sagebrush habitats.

Conservation Objectives

The group suggests the following to restore these sage grouse habitats:

1. Over the next five years document the amount of pinyon juniper encroachment through the use of aerial photographs and other mapping sources to help identify areas for future treatment. Protection of important R-0 and R-2 habitats should be a priority. The plan being developed for Porter Canyon is proposing pinyon juniper thinning and removal as one of the treatments to improve sage grouse habitat in the Desatoya PMU. Some of the projects goals are to improve meadow habitats, increase the water table for the springs and associated meadows and to further reduce the erosion and headcutting. The number of acres and types of treatments for the project will be analyzed when more information has been gathered and specific sites for treatment have been identified. A detailed plan for the project will be drafted by NRCS during 2004.
2. Over the next five years identify stands of over mature sagebrush for treatment. Projects should be small in size and create a mosaic of different age and structure of sagebrush. The projects will be aimed at improving the quality of important sage grouse habitat. The number of acres and types of treatments will be analyzed when more information has been gathered and specific sites for treatment have been identified.

Monitoring

1. The BLM will set up monitoring transects in R-0 and R-2 habitats to monitor sagebrush canopy cover and grass/forb composition. The information will be valuable in determining productivity of sagebrush ecosystems and delineating where treatments may be necessary.

HARVEST AND POACHING – LOW RISK

Studies have determined that excessive harvest may negatively impact sage grouse populations. The most vulnerable are smaller populations where losses from harvest and other factors may exceed annual recruitment and survival. The poaching (illegal harvest) of sage grouse may also negatively impact smaller sage grouse populations.

The sage grouse hunting season in the Desatoya PMU has been closed for several years. The season will remain closed until such time that data indicates that the population can support some form of limited harvest.

Game wardens patrol the PMU primarily during hunting seasons that occur between September and February but are also in the area sporadically during the spring and summer months. This enforcement strategy is believed to be successful in preventing the levels of illegal poaching of sage grouse that would be necessary to impact the population.

Conservation Goals

Ensure that the harvest of sage grouse (both legal and illegal) does not exceed levels determined to be detrimental to the population.

Conservation Objectives

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4. The number of sage grouse harvested during an open hunting season shall not exceed 10% of the fall population estimate. The hunting season in the Desatoya PMU shall remain closed until such time that sufficient data exist to allow for a sage grouse hunting season (NDOW).
5. Hunting seasons shall be closed in PMU's where less than 100 male grouse have been counted on the strutting grounds during at least one of the previous two breeding seasons (determined by aerial or ground counts of trend leks) or where population levels are small enough that harvest may exceed 10% of the fall population estimate (NDOW).
6. Maintain the current level of law enforcement patrols in the PMU to monitor and curb the illegal poaching of sage grouse (NDOW).

Monitoring

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6. Continue to monitor sage grouse population levels through lek counts and brood surveys (NDOW).
7. Continue to monitor the number of citations written for the illegal harvest of sage grouse in order to determine where potential problems exist (NDOW).

LAWS, POLICIES, REGULATIONS THAT CONFLICT WITH BIOLOGICAL NEEDS – MODERATE RISK

There is concern (moderate risk) that regulations associated with Wilderness Study Areas (WSA) may adversely effect the implementation of projects aimed at restoring or improving sage grouse habitat. The Wilderness Study Area within the Desatoya PMU covers 43,180 acres and could prohibit or delay future management actions regarding plan design, costs and project implementation.

The Congress should re-evaluate the suitability of the Desatoya WSA in respect to the current sage grouse planning effort. Amending the Land Use Planning Document through a Resource Management Plan in an effort to drop the WSA would benefit the management of sage grouse.

This plan will be in compliance with non-impairment criteria for the WSA.

Should the Desatoya WSA be designated as Wilderness it is recommended that herding horses from a helicopter, pinyon juniper control and the maintenance of exclosures be continued. Other potential conflicts such as rehabilitating burned areas following fire, or the manipulation of sagebrush to enhance sage grouse habitat may also be affected do to the Wilderness or WSA regulations.

Conservation Goals

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Attempt to reduce the impacts from the laws, policies or regulations associated with WSA's by knowing and designing projects that take into account the restrictions and limitations in WSA's. Projects within the WSA will require more time to design and more difficult to implement but are necessary to improve and restore sage grouse habitat.

Conservation Objectives

1. The Congress should re-evaluate the suitability of the Desatoya WSA in respect to sage grouse habitat restoration. Possible conflicts include pinyon juniper, noxious weed control and mechanical restoration of sage grouse habitat.
2. Over the next five years investigate the potential for habitat protection and enhancement projects within the WSA that will improve sage grouse habitat. All projects should take into account the restrictions and conflicts often associated with Wilderness Study Areas.

LIVESTOCK MANAGEMENT – MODERATELY LOW RISK

Livestock within the Desatoya PMU are managed under a rotational grazing management system. Upland habitats are generally in fair to good condition with a good understory of grasses and forbs. Riparian and meadows systems within the PMU are generally in fair condition, but in most cases do not meet the hiding/escape cover needs for sage grouse.

Wild horse population within the PMU has grown to approximately three times the Appropriate Management Level (AML). The high horse numbers will have to be brought under control so that sound grazing management decisions can be made. With horse populations at the AML, management of all grazing animals can be better addressed. With the current grazing system in place adjustments in livestock grazing can be made using the adaptive management approach. Meadow and riparian areas in R-0 habitats are generally in fair condition with a slow upward trend.

The Carson District of the BLM is in the process of building several exclosures in an effort to protect and restore critical meadow and riparian habitats within the Desatoya PMU. The North Central Planning Group realizes the benefits that these habitat protection and enhancement projects will provide to both sage grouse and resource managers. The feasibility of these projects was discussed with the BLM, NDOW and the permittees. Many of the areas to be protected have been recurrent problems for managers and will protect and enhance critical sage grouse habitat. The projects are designed to protect the water sources and associated meadow systems. If in the future the vegetation within these protected areas becomes overgrown and is thought to preclude grouse use, livestock will be used as a tool to create and maintain the meadows in optimum condition for grouse.

The Porter Canyon (private land) project was proposed by the Hendrix family and Duane Coombs (Ranch Manager for the Hendrix) who own and manage the Smith Creek Ranch on the eastern slope of the Desatoya Range. Initially, the stinger meadows will be fenced (Completed December 2003) to allow for protection and restoration of the riparian areas. NRCS has been tasked with drafting a plan (by the end of 2004) for the area aimed at enhancing habitat for sage grouse. Pinyon juniper removal and thinning, installation of rock gabions to prevent further erosion and reseeding areas are just some of the treatments proposed to enhance the area for sage grouse.

Conservation Goals

Over the next five-year period, make adjustments (if necessary) to the current grazing management system to ensure that the seasonal habitat requirements for sage grouse are met (using the adaptive management approach).

Conservation Objectives

2. Manage livestock utilization in nesting and early brood rearing habitat to leave sufficient herbaceous height to provide hiding cover for nests and young chicks. How this equates to an average utilization level is unknown and likely to vary widely across the PMU, depending on site potential and growth form of the sagebrush.
3. Utilization limits on riparian areas should leave at least about 4-6 inches of herbaceous material (on average) to provide sufficient cover for late brood rearing during the summer months.
3. Construct the BLM proposed riparian protection projects in Smith and Topia Canyons by 2004. The projects are designed to protect and restore critical meadow and riparian habitats. The North Central Planning Group realizes the benefits that these habitat protection and enhancement projects will provide to both sage grouse and resource managers. The feasibility of these projects to be implemented on the ground has been discussed with all parties involved. If the vegetation within these protected areas becomes overgrown and is thought to preclude maximum grouse use, livestock will be used as a tool to create and maintain the meadows in optimum condition for grouse.

Comment [AU7]: Stay away from hard values since there is no data to show that specific utilization levels will benefit grouse. Write it in terms related to grouse biology needs.

4. Design and implement the private lands enhancement project in Porter Canyon by 2004 (Proposed by the Hendrix family who own the Smith Creek Ranch). The plan being developed for Porter Canyon is proposing pinyon juniper thinning/ removal and meadow protection (fencing meadows December 2003) as some of the treatments to improve sage grouse habitat in the Desatoya PMU. Some of the projects goals are to improve meadow habitats (reduce impacts from horses and livestock), increase the water table for the springs and associated meadows and to reduce and prevent additional erosion and headcutting. The number of acres and types of treatments for the project will be analyzed when more information has been gathered and specific sites for treatment have been identified. A detailed plan for the project will be drafted by NRCS during 2004.
5. Design and implement sage grouse habitat enhancements project in the Haypress Meadows area by 2006. This project would enhance critical sage grouse upland and meadow habitats (R-0 habitat). The BLM, NDOW and the livestock operator will work together in the design of the project to ensure that the project will benefit both the livestock operator and resource managers.
6. Vegetation within a few of the existing riparian exclosures (Edwards Creek) exceeds the optimal vegetative height for sage grouse. It is believed that grouse use of these riparian areas has declined due to the lack of open areas for feeding and the difficulty for grouse to move within the thick herbaceous cover. The NDOW and BLM will work with livestock permittees in an effort to create optimal meadow habitat for grouse within these fenced areas.
7. Remove water tanks and troughs away from numerous spring sources and riparian areas by 2006. Many of the water sources are located on private land and the water rights have been adjudicated to the permittee. The troughs and tanks will be moved away from the spring or riparian area and the excess water piped back to the source. The action will improve the condition of these important water sources and riparian areas for grouse.

Monitoring:

1. The Bureau of Land Management will monitor livestock grazing (utilization) to ensure sufficient herbaceous material is available to meet the seasonal requirements of sage grouse in nesting/early brood rearing, and late brood rearing habitat, respectively, at the appropriate time of year, to provide adequate hiding and/or thermal cover. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology are potential limiting factors for nest success.

MINING – LOW RISK

There are no large-scale mining operations in the Desatoya PMU, and none are planned to come on line in the next 5-10 years. Mining claims are present but there has been little if any drilling activity. Risks from mining are not a current problem and are not expected to be in the foreseeable future, however if gold prices increase significantly or technology is greatly improved that may change.

Conservation Goal(s)

Monitor current and proposed mining activity in the PMU to ensure that impacts to grouse are minimized.

Conservation Objectives:

1. Through the NEPA process, identify areas important to grouse so that alternatives or adjustments can be made to minimize the impacts to sage grouse.
2. Mitigation for the destruction of sage grouse habitat is required.

Monitoring

1. Monitor mining activity and proposals to prevent impacts to sage grouse.

MONITOR, RESEARCH AND EDUCATION – MODERATE RISK

Population Biology

The sage grouse population in the Desatoya Population Management Unit is the largest of the three sage grouse populations in Churchill and extreme western Lander Counties. The population is estimated at around 800 birds. In recent years, more leks have been identified and some of the important habitats have been generally defined. However, there is still much to be learned regarding whether the population is migratory or non-migratory, whether habitats have been fragmented and in defining critical habitats.

The sage grouse data available for Churchill County sage grouse populations is limited and has large gaps. Some harvest and brood survey data is available from as early as 1949. Based on the limited data it would appear that sage grouse populations in Churchill County have mimicked the decline of sage grouse populations throughout the West. Harvest and production data from the 1960's and early 1970's suggest that population levels were higher than what is estimated today. The Churchill/Lander County and District (Sierra) wide data is provided in Appendix 1.

Seasonal sage grouse habitats in the Desatoya Range remain mostly intact and have not been impacted like other PMU's from summer wildfires. The range is very well watered and the only leks that have been lost (to our knowledge) have been the leks lost due to

highway construction and powerlines during the mid to late 1960's. Pinyon juniper encroachment has been a slow yet methodical process and has invaded sage grouse habitats over the last century.

The first comprehensive aerial lek survey within Churchill County was conducted in 1992. Lek surveys have been conducted on an annual basis since 1999. The following table shows the number of birds observed during ground and aerial surveys (Table 1).

Table 1.

Lek Name	# of Birds 1986	# of Birds 1992	# of Birds 1999	# of Birds 2000	# of Birds 2001	# of Birds 2002*	# of Birds 2003
Desatoya 1		4	0				
Desatoya 2		2	0	0			
Desatoya 3		1	0	0	0		
Desatoya 4		10	15	6	8		
Desatoya 5		9	0	0	1		
Desatoya 6		1	0	0	4		
Desatoya 7		1	0	0			
Desatoya 8		3	0	4	4		
Desatoya 9	11		0	1		1	
Desatoya 10				26	2		
Desatoya 11				40	27	30	32
Desatoya 12				3			
Desatoya 13					20	12	12
Desatoya 14				2			
Desatoya 15					1	2	
Desatoya 16					3		
Desatoya 17		?					
Desatoya 18							32 (new)
Desatoya 19							35 (new)

* Surveys in 2002 were conducted too late in the morning (7:00–8:00am) after birds had already left the leks. Ground counts were conducted on select grounds in 2003. Drought conditions and other factors may affect the number of birds counted on leks from year to year. Analysis of data (trend) should be applied over the long-term.

Very little information and data has been collected regarding current distribution, movements, habitat fragmentation, and critical habitats on the small sage grouse populations that exist within the North Central Planning area. The North Central Planning Group believes it is important for the future management of these sage grouse populations that NDOW continue to learn more about them.

Conservation Goals

Continue to increase our knowledge regarding important habitats, bird distribution and movements of sage grouse in the Desatoya PMU so that the best management decisions can be made.

Conservation Objectives

The planning group made the following recommendations for the Desatoya PMU:

6. Continue with annual aerial and ground lek counts/surveys and determine which leks will be used as trend leks.
7. Expand both ground and aerial searches to identify additional leks that may occur in the PMU.
8. The sage grouse hunting season will remain closed within this PMU until sufficient data demonstrate the population can support limited harvest
9. Over the next five years, attempt to capture and radio telemeter 15 to 20 sage grouse (majority to be females) to determine if the population is migratory or non-migratory, and if it is part of a larger metapopulation. The tracking of the bird movements would help increase the knowledge and understanding of the current distribution and key habitats of sage grouse within the PMU. The effort will also help to determine if habitats are fragmented or are still intact. The timetable for the capture will depend upon the tri-county group's ranking of the Desatoya Range PMU and its overall ranking within the plan. Once more is known regarding important habitats and the birds movements, we will then be better able to address specific projects to enhance or protect those important habitats.
10. The absence of annual wing data limits our knowledge about the population biology of sage grouse in the Desatoya Range. To obtain population level data brood surveys should be conducted during the summer months to determine productivity and recruitment. In 2002, new brood survey routes were established within the Desatoya PMU and resulted in a higher number of birds classified. NDOW will continue to conduct these surveys on an annual basis. Summer students hired by NDOW may be used to help collect this information in the future.

Monitoring

5. Monitor the radio-collared birds for up to two years. The data will help to determine whether the population is migratory or non-migratory, determine if habitats have become fragmented and may help find additional lek sites. Also, the monitoring of the birds movements will help to better define critical nesting, brood rearing and wintering habitats. With all of the projects that will be proposed through this sage grouse planning process, it would be beneficial if NDOW could hire someone to conduct the monitoring of all collared birds statewide.

6. Conduct brood surveys during the summer months in order to collect productivity and recruitment data for this population. The use of summer students to conduct the surveys may help to offset the additional workload for NDOW.
7. Continue to monitor other marking studies and data collection going on in adjacent PMU's in order to compare and better understand sage grouse populations from a metapopulation perspective.

PREDATION – MODERATE RISK

Ranchers who live in Smith Creek Valley have reported an increasing trend in the number of ravens and crows. Some members of the group also felt that raptors may have a negative affect on the sage grouse population. No predator research has been conducted within this PMU but some studies have indicated that predators can have a significant impact on sage grouse populations under certain circumstances.

Wildlife Services currently conducts aerial hunting of coyotes in an attempt to reduce coyote depredation. Coyote hunting by local residents is also popular in the Desatoya PMU.

NDOW will continue to conduct aerial and ground surveys of trend leks to monitor sage grouse production and recruitment. If recruitment falls below that necessary to maintain the population for three consecutive years, an investigation into what is causing the decline (habitat condition, predation, etc.) and at what point during the nesting or brood rearing season the loss of nests or broods is occurring. If it is determined that predators are the reason for the decline take the necessary steps (ie. institute a predator control project or improve the condition of the habitat) to correct the problem.

Conservation Goals

Design and implement predator control projects if it is determined that predators are causing a decline in sage grouse nesting success or recruitment.

Conservation Objectives

2. Monitor sage grouse recruitment (chicks per hen) by conducting brood surveys in the PMU. If recruitment falls below that necessary to maintain the population (est. 2.25 chicks per hen) for three consecutive years, then investigate whether predators may be having an impact on nesting success and survival of broods. Predator densities will have to be determined. Control projects will be initiated if it is found that predators are causing the decline in sage grouse production and recruitment

Monitoring

1. If a predator control project is initiated Wildlife Services will monitor the control project and treatment.
2. NDOW will continue to monitor sage grouse production and recruitment by conducting brood surveys and lek counts over the length of the project.

REALTY ACTIONS – LOW RISK

Three historical leks have been lost due to the construction of utility lines/corridors and the construction of U.S Highway 50 around the north-end of the Desatoya Range in the mid 1960's. Today a majority of impacts from new construction are mediated through the NEPA process.

Other risks such as energy related projects, communication sites, transportation corridors, and urban development have all been assessed as to their risk to sage grouse (Risk Assessment Matrix Appendix 1.) during this process.

Conservation Goals

Prevent the loss of sage grouse habitat due to any realty action.

Conservation Objectives

1. NDOW, BLM, USFS, other government entities, and the general public have an opportunity to review many of the proposals for utility lines/corridors, energy related projects, communication sites, transportation corridors, and urban development through the NEPA process to make sure that these types of realty actions do not impact sage grouse or their habitats. Any other projects that are not handled through the NEPA process will also be addressed.
2. Mitigation is warranted for any loss of habitat or negative impact to the sage grouse population.

Monitoring

1. Monitor proposed Realty Actions through the NEPA process to ensure that no impacts to grouse or their habitats occur.

RECREATION – MODERATELY LOW

The North Central Local Planning Group determined that there is a moderately low risk to sage grouse due to recreational activity. The Desatoya Range is a popular area for camping, deer hunting, and other outdoor activities. There may be some displacement of grouse during the summer and early fall months due to disturbances caused by outdoor enthusiasts.

However, the risk is thought to be only moderately low due to the large amount of habitat available to grouse and the short duration of the disturbance.

Conservation Goal

Ensure that recreational activities (or other factors related to recreation) do not impact sage grouse or their habitat. If in the future it is determined that the activity or factor is negatively impacting the sage grouse population enact restrictions or management actions that will alleviate the impact.

Conservation Strategies

1. Consider closing or re-routing roads around important habitats if the roads or recreational activities are found to be impacting sage grouse (BLM). Closures may be enforced on a seasonal basis.
3. During extreme fire danger enforce campfire and off road restrictions designed to decrease the chance of wildfires caused by recreational activities (BLM).
3. Keep exact locations of lek sites confidential to limit disturbance of sage grouse during the breeding season (NDOW). At other times of the year grouse distribution is thought to be sufficiently widespread to limit impacts from recreational activities.

WILD HORSE AND BURRO MANAGEMENT – HIGH RISK

There is one herd management area (HMA) within the Desatoya PMU. The HMA covers 139,283 acres, and has an appropriate management level (AML) of 127 - 180 horses. The current population estimate for horses is estimated to be 500 horses both inside and outside of the herd management area. These horses use the forage resource year-round and year-round grazing is known to cause adverse changes in sagebrush/grass plant communities. Yearlong grazing from an excessive number of horses located both inside and outside the HMA was rated as a high risk factor to sage grouse in the PMU.

The current level of grazing by wild horses has created a moderately high to high level of risk to most, if not all birds in the PMU because: 1. Large areas of early brood and late brood rearing habitat that are used by horses lack adequate cover and production from perennial grasses; 2. Large areas of early brood and late brood rearing habitat that are grazed by horses lack adequate cover and production from desired forb species; and 3. There is insufficient residual herbaceous material in both the early brood and late brood habitat. The risk of wild horses preventing or reducing access to water, meadows, or other critical habitat is considered moderate to moderately low, and is expected to remain so into the future.

All of these risks are expected to remain moderately high to high in the future, given current management actions. These risks are largely indirect to sage grouse, are largely controllable, and are predictable.

Comment [AUB]: These statements derived from page 12 of the matrix do not fit with statements on page 1 of the matrix.

The Porter Canyon project that was initiated this past fall will also address grazing impacts on riparian and upland habitats. The project is scheduled to occur over the next several years and a plan is currently being drafted by NRCS.

Conservation Goals

Maintain the wild horse population at a size (AML) that will increase the cover and production of perennial grasses and forbs sufficient to meet the desired seasonal habitat requirements of sage grouse (assuming site potential allows for this) in both the early brood rearing habitat, and the late brood rearing areas, respectively.

Conservation Objectives

1. BLM will maintain the horse population within the identified range of 127 – 180 animals.
2. The Bureau of Land Management will initiate a gather when herd numbers exceed 180 head of horses.
3. Construct the BLM proposed riparian protection projects in Smith and Topia Canyons by 2004. The projects will address horse and livestock impacts. The projects are designed to protect and restore critical meadow and riparian habitats. The feasibility of the fencing projects has already been discussed with all parties involved. If the vegetation within these protected areas becomes overgrown and is thought to preclude maximum grouse use, livestock will be used as a tool to create and maintain the meadows in optimum condition for grouse.
4. Design and implement the private lands enhancement project in Porter Canyon by 2004 (Proposed by the Hendrix family who own the Smith Creek Ranch). The project is aimed at improving sage grouse habitat on private lands. The protection of the springs and riparian areas is an effort to reduce grazing impacts (both horse and livestock) on meadow habitats.
5. Design and implement habitat enhancements project in the Haypress Meadows area by 2006. This project would enhance critical sage grouse habitat (R-0 habitat). The BLM, NDOW and the livestock operator will work together in the design of the project to ensure that the project will benefit both the livestock operator and resource managers (feasibility). The protection of the springs and riparian areas is an effort to reduce grazing impacts (both horse and livestock) on meadow habitats.
6. Manage utilization in late brood rearing habitat to leave sufficient herbaceous material to provide adequate cover for sage grouse. How this equates to an average utilization level is unknown and will vary depending on the sites potential. The protection of the springs and riparian areas is an effort to reduce grazing impacts (both horse and livestock) on meadow habitats

7. Manage utilization in nesting and early brood rearing habitat to leave sufficient herbaceous material to provide hiding cover for nests and young chicks. How this equates to an average utilization level is unknown and likely to vary widely across the PMU, depending on site potential and growth form of the sagebrush. ||
8. Remove water tanks and troughs away from numerous spring sources and riparian areas by 2006. Many of the water sources are located on private land and the water rights have been adjudicated to the permittee. The troughs and tanks will be moved away from the spring or riparian area and the water piped back to the source. The action will improve the condition of these important water sources and riparian areas for grouse.

Comment [AU9]: A goal, not an objective. Suggest incorporating into a goal statement as done above

Comment [AU10]: Stay away from hard values since there is no data to show that specific utilization levels will benefit grouse. Write it in terms related to grouse biology needs.

Monitoring

1. The BLM will continue to monitor horse numbers using current aerial census techniques. The BLM will ensure that horse numbers do not exceed the AML range of 127 to 180 horses. The entire PMU should be flown on an annual basis to accurately monitor horse numbers.
2. The Carson District of the BLM will establish line intercept monitoring transects in nesting/early brood rearing habitats (R-0 habitats) by 2004 (Similar to BLM Winnemucca District protocol). The transects will be measured a minimum of every three years, at the appropriate time of year, to ensure sufficient herbaceous vegetation to provide escape and/or thermal cover for sage grouse. All monitoring decisions will consider the potential of the site to produce herbaceous vegetation (i.e., soils and stage of plant succession) and whether herbaceous growth or shrub size and morphology are the potential limiting factors for nest success.
3. The Carson District of the BLM should establish riparian utilization cages (minimum of two cages per year per pasture) in all allotments in the PMU. Utilization rates will be measured on major meadow and riparian systems on an annual basis in R-0 habitats. The monitoring is necessary in order to ensure adequate escape/loafing cover for sage grouse. The utilization will be monitored a sufficient number of times throughout the season of use to ensure that the utilization does not exceed the terms and conditions in the existing FMUD. Livestock will be herded away from the area once utilization levels have been met.

WILDLIFE MANAGEMENT/GRAZING – LOW RISK

The local planning group did not consider Wildlife Management/Grazing to be a risk to the sage grouse population in the Desatoya PMU.

MILITARY ACTIONS – LOW RISK

The Desatoya PMU is part of the Navy's 13,000 square miles of Fallon Range Training Complex (FRTC). Both fixed wing and rotary wing aircraft overfly the area intermittently at various altitudes. On average 10-15% of the training takes place over the Desatoyas and

Smith Creek (Desatoya PMU). Previous studies have concluded that the limited Navy training conducted resulted in either “no impact” or “minor and insignificant impact”.

Navy ground training consists of convoy traffic using existing roads and consists of three to four vehicles traveling at slow speeds (less than 15 miles per hour). Combat Search and Rescue (CSAR) Training also takes place in the Desatoyas and is restricted to very few helicopter landings. CSAR training was fully assessed in BLM Environmental Assessment EA#98036. This document concludes; “Since the training would occur on any given site on a limited basis and over a short duration, impacts would be minor and would not be significant.”

The development of electronic warfare sites (EW) and tracking instrumentation subsystem (TIS) sites in Smith Creek Valley was addressed in the Final Environmental Impact Statement, Proposed Fallon Range Training Complex Requirements, Naval Air Station Fallon, January 2000. This document fully assessed the impacts to sage grouse from several proposed activities and concluded that no impacts would result from implementation.

There is local concern due to disturbances that training activities create especially when it occurs near leks and nesting sites. Local citizens have concerns that disturbances to sage grouse occur when Navy personnel do not follow Navy regulations.

Conservation Goal

Continue to monitor the potential risks to sage grouse from Military activities in the PMU.

Conservation Strategies

1. Cooperate and coordinate with the Naval Air Station Fallon (U.S. Navy) to reduce potential disturbances in sage grouse habitat.
2. Provide the Navy with important information on critical habitats and seasons of use so that these areas can be avoided during training operations (sensitive areas).

Desatoya Population Management Unit

RISK FACTOR -- POOR HABITAT QUALITY	Potential Effects on Sage Grouse Habitat Requirements or Sage Grouse Biology	Potential Factors Related to Habitat Quality to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird					Spatial Scale					Temporal Scale					Risk Type						
			Present/Absent (Y/N)	Individual (s)	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct (on birds)	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
	Lack of Desired Forbs		Y	0	0	0	2	0	0	0	0	2	2	2	2	3	3	0	Y	Y	Y		Y	
	Lack of Perennial Herbaceous Cover		Y	0	0	0	2	0	0	0	0	2	2	2	3	3	0	Y	Y	Y		Y		
	Gaps Present Between Ground and Most Sagebrush Canopies (Umbrella Effect)		N																					
	Most Sagebrush Canopies Have Sparse Leaves and Stems		N																					
	Overmature Sagebrush in Extensive Monocultures		Y	0	3	3	3	0	2	2	2	0	3	3	3	3	3	0	Y	Y	Y		Y	
	Poor Seed Production for Sagebrush		N																					
	Poor Mix of Sagebrush Range Sites		N																					
	Abundant Annual Grasses		Y	1	0	0	0	1	1	0	0	0	1	2	3	2	1	3	Y	Y	Y		Y	
	Noxious Weeds Present		Y	1	0	0	0	1	0	1	0	0	1	2	1	3	3	1	Y	Y	Y		Y	
	Lack of Insects		N																					
	Sagebrush Too Tall for Season of Use		N																					
	Sagebrush Too Short for Season of Use		N																					
	Sagebrush Cover too High for Season of Use		Y	0	3	3	3	0	2	2	2	0	3	3	3	3	3	0	Y	Y	Y		Y	
	Sagebrush Cover to Low for Season of Use		Y	1	2	0	0	1	0	0	0	0	1	2	3	1	0	3	Y	Y	Y		Y	
	R0 on < 40% of PMU		N																					
		<ul style="list-style-type: none"> Sagebrush Size and Shape Arrangement of Habitat Patches Homogeneity of Vegetation Plant Community age Reproduction Potential of SB Seasonal Uses by Grouse Presence of Undesired Species Variety of Plant Species 																						
Explanations/	There is not a significant amount of annual grass in this PMU, however, the largest sage grouse leks are located at the lower elevations where annual grass encroachment has a low affect.																							
Comments/ Summary	There is a limited amount of Nap Weed and Tall White Top at locations that may affect the Nesting/Early Brood and Late Brood/Summer habitat. Sites where sagebrush cover is to low for season of use is due to site potential and is also associated with pinyon/juniper encroachment.																							

RISK FACTOR— HABITAT LOSS - QUANTITY	Potential Effects on Sage Grouse Habitat Requirement or Sage Grouse Biology	Potential Factors Related To Habitat Quantity to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk Limitations to the BirdSpatial Scale										Temporal Scale					Risk Type						
			Present/Absent (Y/N)	Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
	Loss of Sagebrush from Fire – Perennial Component Remains		Y	1	0	0	0	1	0	0	0	0	1	2	3	1	0	1	Y	Y	Y		Y	
	Loss of Sagebrush – Change to Annual Grassland		Y	1	0	0	0	1	0	0	0	0	1	2	3	1	0	1	Y	Y	Y		Y	
	Loss of Sagebrush – Change to Perennial Grass Seeding		Y	1	0	0	0	1	0	0	0	0	1	1	1	1	1	1	Y	Y	Y		Y	
	Loss of Sagebrush - PJ Encroachment		Y	0	3	0	4	0	0	0	4	0	4	4	4	4	3	2	Y	Y	Y		Y	
	Loss of Sagebrush -Mining		N																					
	Loss of Sagebrush - Urban Expansion / Other Development		N																					
	Loss of Meadow Habitat		Y	0	0	3	0	0	0	0	3	0	3	2	2	1	3	1	Y	Y	Y		Y	
	Loss of Access to Meadows		N																					
	Remove/Divert Water Supply		N																					
	Loss of Lek Sites		Y	0	2	2	0	3	0	0	0	0	0											
	Migration Impeded		U																					
	Loss of Habitat Connectivity		U																					
		<ul style="list-style-type: none"> Urban Expansion Road Locations or Engineering Poor Management of Meadows Vegetation Manipulations Location of Infrastructure Fire: Too much or Too Little 																						
Explanations/ Comments/ Summary	<p>There are several exclosures in place at this time that protect meadow habitat. More exclosures are scheduled to be developed in the near future.</p> <p>Two leks have been lost due to the construction of power lines. One lek has been lost due to the construction of Highway 50.</p>																							

Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Grazing Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale						Risk Type					
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Excessive Herbaceous Height in Meadows (>6-8 in)	Livestock Management/ Grazing		0	0	2	0	0	0	0	2	0	2	2	2	0	3	0	Y	Y	Y	0	Y	
Sagebrush Encroachment in Meadows from Overgrazing		Churchill County S.G. Group believes this column should be excluded.																					
Water Sources Surrounded by Substantial Bare Ground			3	0	0	0	0	0	0	2	2	1	1	0	2	0	Y	Y	Y	0	Y		
Inadequate Access to Water			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loss/lack of Herbaceous Cover			0	0	0	2	0	0	0	2	2	2	2	2	2	1	Y	Y	Y	0	Y		
Loss/lack of Desired Forbs			0	0	0	2	0	0	0	2	2	2	2	2	2	1	Y	Y	Y	0	Y		
Loss / Lack of Grass Production			0	0	0	2	0	0	0	2	2	2	2	2	2	1	Y	Y	Y	0	Y		
Loss / Lack of Forb Production			0	0	0	2	0	0	0	2	2	2	2	2	2	1	Y	Y	Y	0	Y		
Trampling of Nests			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Insufficient Herbaceous Stubble Height			0	0	0	1	0	0	0	0	1	1	1	1	2	1	0	Y	Y	Y	0	Y	0
Reduce / Prevent Access to Meadows or Other Critical Habitat			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		<ul style="list-style-type: none"> Grazing System Management Facilities Concentration Points Vegetation Manipulations Season of Use Duration of Use Utilization level Drought Management Strategies Type of Animal 																					
Explanations/ Comments/ Summary	<p>Due to enclosures that are not grazed, there is some excessive herbaceous height in meadows.</p> <p>Where there is insufficient stubble height, site potential is the limiting factor.</p> <p>Projects are now underway to eliminate the cause of bare ground surrounding water sources.</p>																						

Potential Effects on Grouse Biology and Factors that May Contribute to Increased Predation	Ecological Process, Management Action, or Land Use	Potential Factors Related to Predation to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Higher Predator Density	Predation		0	0	3	0	0	0	0	0	3	3	3	3	3	0	0	Y	Y	Y	0	Y	0
Loss of Nests / Eggs			0	0	3	0	0	0	0	0	3	3	3	3	3	0	0	Y	Y	Y	0	Y	0
High Predation Rate for Chicks			0	0	1	0	0	0	0	0	1	1	1	1	1	0	0	Y	Y	Y	0	Y	0
High Predation Rate for Juveniles			0	0	1	0	0	0	0	0	1	1	1	1	1	0	0	Y	Y	Y	0	Y	0
High Predation Rate for Adults			0	0	1	0	0	0	0	0	1	1	1	1	1	0	0	Y	Y	Y	0	Y	0
Contributing Factors are / may be:																							
Insufficient Hiding Cover																							
Depleted Resources (must Spend More Time Foraging)?																							
Habitat Quantity/Quality Force Grouse to Concentrate in a Few or Small Areas.																							
Early Movement to Meadows to obtain nutritious feed (can also be a drought effect)																							
		<ul style="list-style-type: none"> • Predator Numbers • Predator Density • Interactions with Habitat Quality and Quantity • How Changes in Grouse Behavior may Affect Predator Success • Potential Interactions with Weather 																					
Explanations/ Comments/ Summary	Raven and Crow densities have been observed to be an increasing trend. Raptor have an impact on sage grouse populations. The area is aerially hunted by wildlife services. Coyote hunting is popular in the area.																						

Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Recreation to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale						Risk Type					
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting/Early Brood	Summer/Late Brood	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Loss of Water Sources	Recreation - Direct Effects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Loss of Leks			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Loss of Sagebrush Habitat			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Loss of Meadows / Riparian			2	0	0	0	0	0	2	0	0	2	3	3	0	2	0	Y	Y	Y	0	Y	0
	Recreation - Indirect Effects																						
Noise / Activity Prevent Use of Nearby Water			2	0	0	0	0	0	2	0	0	2	3	3	0	2	0	Y	Y	Y	0	Y	0
Noise / Activity Prevent Use of Nearby Leks			2	0	0	0	2	0	0	0	0	2	2	3	0	2	0	Y	Y	Y	0	Y	0
Noise / Activity Prevent Use of Nearby Nesting Areas			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Noise / Activity Prevent Use of Nearby Riparian Habitat			2	0	0	0	0	0	2	0	0	2	3	3	0	2	0	Y	Y	Y	0	Y	0
Higher Predator Density			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Increase Avian Perch Sites			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-Increase Predator Food Sources			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Increase Potential for Fires			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			<ul style="list-style-type: none"> • ORV's • Developed Sites or Dispersed • Concentration Points • Road Network • Frequency, Intensity, and Season of Activity • Fire Potential • Establishment of Weeds 																				
Explanations/ Comments/ Summary	<p>This PMU is actively used for recreation in the spring, summer and fall.</p> <p>Campers, hunters, and ATV riders impact the PMU, especially the riparian areas.</p> <p>There is an increase of activity around lek sites with incidences of vehicles being parked on the lek site itself.</p>																						

Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Grazing Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Sagebrush Encroachment in Meadows From Overgrazing	Wild Horse and Burro Management	Churchill County S.G. Group believes this column should be excluded.																					
Water Sources Surrounded by Substantial Bare Ground		0	0	4	0	0	0	0	4	0	4	5	5	4	4	4	Y	Y	Y	0	Y	0	
Prevent / Reduce Access to Water		0	0	3	0	0	0	0	3	0	3	3	3	0	0	0	Y	Y	Y	0	Y	0	
Loss / Lack of Grass Cover		0	0	5	0	0	0	0	0	5	5	4	4	4	4	3	Y	Y	Y	0	Y	0	
Loss / Lack of Forb Cover		0	0	5	0	0	0	0	0	5	5	4	4	4	4	3	Y	Y	Y	0	Y	0	
Loss / Lack of Grass Production		0	0	5	0	0	0	0	0	5	5	4	4	4	4	3	Y	Y	Y	0	Y	0	
Loss / Lack of Forb Production		0	0	5	0	0	0	0	0	5	5	4	4	4	4	3	Y	Y	Y	0	Y	0	
Trampling of Nests		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Insufficient Herbaceous Stubble Height		0	0	5	0	0	0	0	0	5	5	4	4	4	4	4	Y	Y	Y	0	Y	0	
Reduce / Prevent Access to Meadows or Other Critical Habitat		0	0	2	0	0	0	0	0	2	2	2	2	2	2	2	Y	Y	Y	0	Y	0	
		<ul style="list-style-type: none"> Population Size Location of HMA's Management Facilities Concentration Points Funding Constraints Season of Use Duration of Use Utilization level AML' Exceeded Drought Management Strategies 																					
Explanations/ Comments/ Summary	There is one herd management area in this PMU. The appropriate management level is 184 horses. It is estimated that there are 500 – 600 horses inside and outside of this HMA at this time. These horses are both inside and outside of the HMA. Due to year-round use of the resource and the unmanaged number, these horses are having a detrimental affect on the habitat of this PMU.																						

**LONE WILLOW POPULATION MANAGEMENT UNIT PLAN
NORTH CENTRAL CONSERVATION PLANNING AREA**

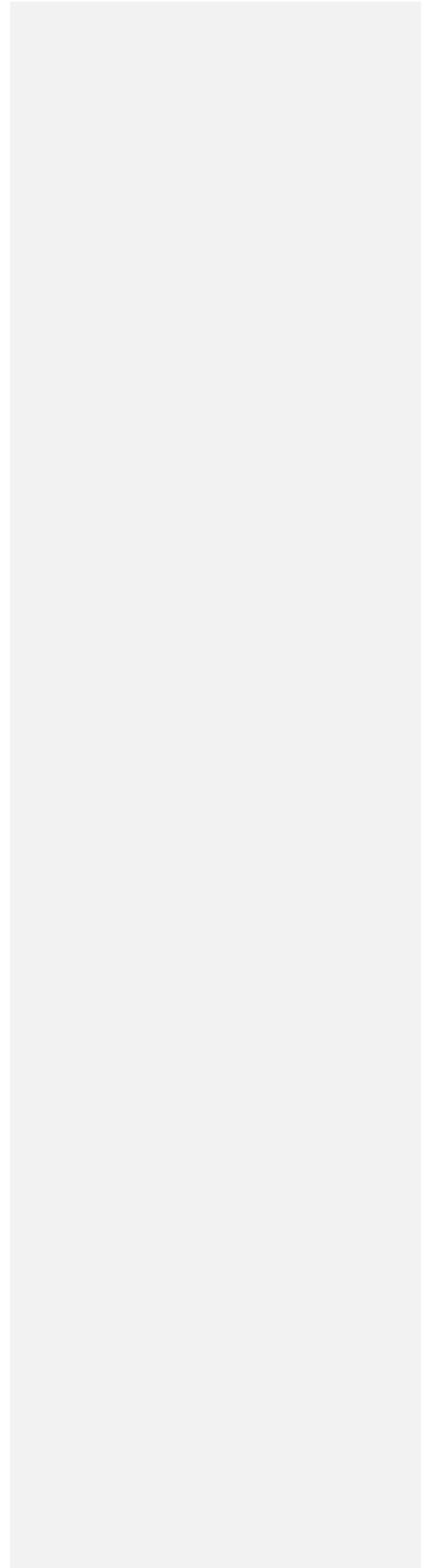


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LONE WILLOW POPULATION MANAGEMENT UNIT RISK FACTOR ASSESSMENT AND PROPOSED ACTION PLAN

The following document provides an overall description of the location, land ownership, climate, sage-grouse population information, sage-grouse use areas, and habitat rating of the Lone Willow Population Management Unit. That preface information is merely intended as an overview of the PMU. The primary objective of the document is to provide a full evaluation of each risk factor for sage-grouse, rate those risk factors (low-medium-high) and develop conservation goals (current and future) to address those issues with a ranking of moderate to high. Parallel to that effort, objectives were developed (current and future) to attain the identified conservation goals. In order to accomplish this task, the North Central Local Planning Group designed their own risk assessment matrix to evaluate the primary risk factors for sage-grouse and or their habitat (see attachment). The matrix served as the basis for this narrative and analysis. Each risk factor and subcategory was identified and or discussed regardless of the risk factor ranking. The North Central Planning Group opted for this approach to insure that all risk factors were considered and nothing was overlooked in the assessment process.

In order to more readily access each risk factor, a table of contents for each is included (page 2). Although many risk factors are rated as low or not applicable to this PMU, a number of risk factors are rated at a moderate or high level indicating a risk factor that needs to be addressed to stabilize and improve sage-grouse populations and or their habitat. Obviously within those elevated risk factors requiring action, the most immediate threats have to be prioritized.

The most significant risk factor to this population of sage-grouse is the large acreage of sagebrush habitat being lost to wildfire and type converted to invasive species such as cheatgrass. The most immediate threat to this population is the loss of the sagebrush habitat comprising the bulk of the remaining winter habitat for sage-grouse. As discussed, a number of other moderate to high risk factors pose threats to this population of sage-grouse, but none is as immediate or threatening on a landscape scale.

Actionable treatment plans have been developed in concert with the objectives to attain the conservation goals for those risk factors rated as moderate or high. Although the risk factors have been identified, the ability to address actionable measures to correct those risks may well be influenced by budgets, time and or current science. Risk factors with low ratings are not included in actionable items, but are identified. By no means should they be interpreted as risks involving “no action”. Rather they will be addressed with normal resource planning processes and budget opportunities facilitating action to remedy the risks.

POPULATION MANAGEMENT UNIT (PMU) DESCRIPTION

Location, Land Ownership, Topography, and Climate

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The Lone Willow PMU is located in the north-central portion of Humboldt County. Oregon borders the entire northern portion of the PMU (see attached map). This PMU has a horseshoe shape that brackets Kings River Valley and includes all of the Double H, Montana, and Bilk Creek Mountains. From an interstate perspective (relative to sage-grouse) the PMU continues north into the Trout Creek Mountains and White Horse Mountains, in Oregon. The Nevada portion of the Trout Creek Mountains comprises the balance of the major use areas. The eastern boundary roughly parallels the eastern base of the Montana Mountains, and the eastern base of the Double H Mountains. The boundary continues around the south tip of the Double H Mountains back north along the west slope of the Double H and Montana Mountains. The PMU takes in the northern portion of Kings River Valley, turns south along the east slope of the Bilk Creek Mountains to the south end of that range and back along the west slope (of the Bilk Creeks) to the Oregon line. The PMU encompasses 480,107 acres or 750 square miles.

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Table x: Land Ownership in the Lone Willow PMU

<u>Ownership</u>	<u>Acres</u>	<u>Percent</u>
Public-BLM	456,500.28	95%
Native American Reservations	0	0%
Private	23,606.58	5%
Surface Waters	0	0%

The lower elevations follow the entire perimeter as it borders the east/west and south slopes of the Montana, Double H and Bilk Creek Mountains. The lower elevations vary from 4,300 to 5,000 ft. and are arid sagebrush sites located immediately above the salt desert shrub zone. The upper elevation varies among the mountain ranges, but the highest sage-grouse use area in the Trout Creek Mountains peaks about 8400-ft. Precipitation levels vary considerably by elevation and location, ranging from 6 inches at the lower elevations to over 30 inches at the top of the Trout Creek Mountains. The Montana Mountains intercept a storm track, and collect and retain good snow depths. The high flat plateau and lack of any steep southerly aspects help retain the snow cover into the spring months. The high elevation summer use areas receive between 12-20+ inches of annual precipitation. Vehicular access during the spring months, to assess lek activity or numbers, is usually impossible above 5500-ft. due to wet soil conditions.

Both the Double H and Montana Mountains have steep/escarpments on the west slope, with relatively flat tabletops that slope gently to the east. The upper table portions of these ranges have elevations that vary from 5,500 to slightly over 7,000 ft. The potential vegetation at higher elevations on both mountains is largely sagebrush-bunchgrass communities and mountain brush, particularly on the Montana Mountains. The Montana Mountains have considerably more meadow and riparian systems, and perennial water sources, than do the Double H Mountains. Apart from aspen associated with some of the riparian systems there are no other trees and no Pinion-Juniper (PJ) in these areas. The

Montana Mountains summer use areas support a very rich and diverse (spatially heterogeneous) mixture of Wyoming big sagebrush, mountain big sagebrush, and low sagebrush interspersed with mountain brush. The spatially diverse upland vegetation, combined with the numerous wet meadow systems provides excellent habitat structure to support a very large sage-grouse population. The Double H Mountain has had several large fires since 1985, with the most recent in 2000. Almost the entire mountain has burned, with several areas being burned twice. The mountaintop and most north aspects have an excellent composition of bunchgrasses and forbs with some sagebrush reestablishment. South and west aspects, particularly where soils are shallow, and lower elevations (<5,500 ft) are largely cheatgrass monocultures. Prior to the wildfires, the Double-H's supported a low but stable sage-grouse population. The key habitat components needed to support a large population, similar to the Montana's, were never present.

The Bilk Creek Range is a more typical mountain that rises equally from both the east and west slope. The unique feature of this particular area is that Bilk Creek has its headwaters in the northern portion of the range, and bisects the range as it flows south for approximately 15 miles. The Bilk Mountains support considerably more mountain brush habitat, and have numerous perennial stream systems off the east and northern flanks of the range. The mountain supports large patches of aspen, some Mountain Mahogany and areas with very dense mountain brush. There are only a few scattered Junipers and no Pinyon. Sage-grouse are interspersed throughout the range among those areas open enough to support sagebrush intermixed with the mountain brush. The largest concentration of sage-grouse occurs off the east slope fan that supports a large complex of leks and heavy winter use area.

The Kings River portion of the PMU starts on the benches at the base of the Trout Creek Mountains, immediately north of the agricultural areas. It continues north over a steep escarpment to the top of the high plateau mountain and adjoins the contiguous habitat as it extends into Oregon. The habitat is comprised of primarily Wyoming big sagebrush and low sagebrush at the lower elevation that supports a number of leks and some winter habitat. The top of the Trout Creeks is primarily a mountain big sagebrush/bunchgrass habitat type that brackets the headwaters of Kings River as it flows from the top of the Mountain. A large meadow system is associated with this area. This high elevation area is primarily used as early/late brood and summer use area.

Within the boundary of the PMU, approximately 32% (152,565 acres) of the sagebrush habitat types have burned since 1985. Each of the mountain ranges in this PMU has been affected to varying degrees, in all seasonal use areas. To date, the most heavily influenced sites have been the winter, nesting and early brood use areas. At lower elevations there has been partial or complete loss of sagebrush/grass communities to monocultures of cheatgrass. Large tracts of habitat that formerly supported sage-grouse have been functionally lost. The Wyoming sagebrush communities associated with these seasonal use areas have been the most heavily impacted. Post fire rehabilitation success, in low elevation Wyoming sagebrush community types, has been very low.

Sage-grouse Use and Population Information

A number of sub populations comprise the sage-grouse population in the PMU. Sub-populations occur because of the areas geographic make up and natural breaks in the sage-grouse habitat. Interaction between the sub-populations depends on weather, habitat condition and habitat availability. The Montana Mountain sub-population is somewhat unique in that a sage-grouse marking study has occurred the past three years (2001-2003). The objectives and goals of the study are to determine the sage-grouse population size and the percent of hunter harvest in relationship to the population estimate. The late summer estimate for this complex, over that time period, ranged from 7,300 to 11,000 sage-grouse. The original estimate for the entire PMU, based on lek information coupled with production levels, was 2500-3000 sage-grouse.

The Double H Mountain range was totally burned by wildfire in 2000, with other major fires occurring in the area since 1985. Prior to burning this area never supported a large breeding population, which was to be less than a few hundred grouse. The areas importance was winter habitat. Winter helicopter surveys indicated large numbers of grouse used this area prior to the recent fires. Despite the lack of adequate sagebrush cover for nesting and brood rearing, the current population is estimated to be 100+ sage-grouse as determined from lek surveys in 2002.

Although there are no marking or telemetry information or support data, the Bilk Creek and Kings River sage-grouse populations appear to be closely linked. The contiguous sagebrush habitat involving the breeding areas in Kings River, west to and through the Bilk Creek range, support this theory. Even though a number of leks within the Bilk Creek Range are found on top or off the west slope, substantial attendance at these leks is believed to come from sage-grouse that use the Kings River area during the winter months. A complete lek inventory of both of these areas has never been conducted in the same year and portions of the complex need to be surveyed under better weather conditions. Therefore, it is very difficult to use that data to estimate a breeding population estimate. Professional judgment, coupled with the data on hand, results in a late summer population estimate of a minimum of 1000 to 1,500 sage-grouse.

The Trout Creek Mountains have never been successfully flown to inventory leks. The upper elevations are 8000 + ft., but sage-grouse leks have been observed before in other areas at similar elevations. Even if leks are located, it is believed that the Trout Creek Mountains (NV portion) are used primarily as a summer to late fall use area. Sage-grouse can immigrate to this high plateau from any direction, including Oregon. The Nevada portion of this range supports 200+ sage-grouse in the late summer as determined by professional judgment.

Lek Assessment Work:

Monitoring of known lek sites, on an annual basis to determine trends, has been very inconsistent within this PMU. A few leks were monitored from the ground when weather permitted in the Kings River area during the 1960's through the late 1980's. The surveys were often times conducted from a considerable distance with a spotting scope and only visited once annually. Close vehicle access was often precluded by heavy mud and

snow conditions. The information shows some very general trends, but is wrought with biases. Lek locations were traditionally discovered from the ground, word of mouth and more recently in conjunction with helicopter spring mule deer surveys. The helicopter surveys were started consistently in the late 1970's and provided good insight as to how many lek locations were being over looked. It was determined that the helicopter was an ideal tool for lek surveys as the sage-grouse did not suspend strutting activities which was the case often times with a fixed wing aircraft such as a supercub (avian predator reflex). Starting in the early 1990's, formal helicopter surveys were directed specifically at inventory efforts for lek sites within a given area. Those NDOW survey efforts continue today and have been either funded by NDOW or the Winnemucca BLM Field Office since the early 1990's. Most of the PMU's within the Winnemucca BLM district have been surveyed with considerable effort dedicated to the Lone Willow PMU. Annual ground trend visits were discontinued in the late 1980's with total efforts being directed to inventory work for new lek locations from the helicopter.

A table to display lek trend data would not accurately reflect population cycles due to the low number of ground surveys, biases in those surveys, and limited areas surveyed within the PMU. In order to indicate the number of leks or potential lek sites (birds observed in area not strutting) within this PMU, the following shows the number of sites located from the 1950s to date.

1950's: 0 leks
1960's 2 leks
1970's 15 leks
1980's 0 leks
1990's 60 leks
2000's 4 leks

Within the past couple of year's attempts have been made to establish a flight route involving 20 plus lek sites that can be surveyed in a single morning, flush the males, and determine level of attendance and trend over time. The lek sites and routes are still being developed as some leks within the area seem to be influenced by snow and mud conditions and are very inconsistent in levels from one year to the next. This process will provide a larger sample size, minimize biases such as predator disruption size on any given lek, and provide a sample from a larger total area. These flights should probably be conducted at least twice during the peak attendance period. To date, no firm trend data flight data has been established.

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Habitat Rating / Restoration Values

The North Central Local Area Planning Group went through an extensive process to better outline and map the various sagebrush habitats and the current status of each as defined in the guidelines of the Governors' Recovery Team Plan (GRTP). The GRTP definitions or guidelines appeared to be too broad and were more clearly defined so as to provide better direction in mapping the various categories from the BLM GIS database. Maps are attached that depict the various categories. The various Restoration Values or categories and the acres mapped to each are as follows:

R-0 Key Habitat = 195,201 Acres (40.7%)

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Areas with desired species composition that has sufficient, but not excessive, sagebrush canopy and sufficient grasses and forbs in the understory to provide adequate cover and forage to meet the seasonal needs of sage-grouse (nesting, early brooding, summer, fall/winter)

R-1 = 127 Acres

Areas with potential to produce sagebrush plant communities that have good understory composition of desired grasses and forbs, but lacks sufficient sagebrush canopy.

R-2 = 128,640 Acres (26.8%)

Existing sagebrush plant communities that have good cover with insufficient desired grasses and forbs in the understory.

R-3 = 0 Acres

Areas with potential to produce sagebrush plant communities that have not crossed the Pinyon/Juniper, or Juniper woodland threshold but are in various stages of becoming encroached upon by Pinyon/Juniper, or Juniper.

X-3 = 1,096 Acres

Sagebrush ecosystems, which have crossed the threshold from range site to Pinyon/Juniper, or Juniper woodlands. To include historic existing wooded areas (i.e. Aspen stands).

R-4 = 152,565 (31.7%)

Areas with potential to produce sagebrush plant communities, but are dominated by annual grasslands, annual forbs, or bare ground.

X-4 = 2,477 Acres

Areas that have crossed the threshold, from a sagebrush ecological site, to annual grassland, perennial weeds, or bare ground.

- The **X** indicates areas that are beyond restoration but are needed to have a complete map of our work. These **X** designations are for the North Central Local Area Planning group of the Nevada Sage Grouse conservation Strategy.
- Maps indicate the current vegetation within a PMU and are not broken down into seasonal habitat classifications.

SAGE-GROUSE RISK FACTOR ASSESSMENT PROCESS

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A qualitative risk assessment for the Lone Willow PMU was completed using a matrix developed by the North Central Local Area Planning Group. The risk assessment matrix used a two-pronged approach. **First**, it evaluated how the presence or absence of specific habitat attributes are (current risk) or may (future risk) affect habitat quality and quantity, across a series of spatial and temporal scales. **Second**, eleven ecological processes, management actions, and/or land uses were assessed to determine their potential

risk to required habitat attributes and/or sage-grouse biology. Also, risk type was identified (when applicable) with a yes or no into three basic sub categories: 1. Direct (immediate effect on the bird) or indirect (effect occurs away from the action and/or at a later time), 2. Controllable or uncontrollable, 3. Predictable or unpredictable. Each PMU within the North Central Recovery Area will assess the risk factors using the same matrix. The Humboldt County coordinator or liaison organized two Lone Willow PMU meetings. Those in attendance to complete the matrix included the Humboldt County Extension Educator, a BLM wildlife biologist, a BLM range management specialist, and six ranchers (or former ranchers) and property owners within the PMU.

NDOW did not have a representative present at the initial matrix evaluation meeting due to a position vacancy. Subsequent evaluation by the former NDOW biologist (retired) for the area identified or questioned a number of risk factors that were either rated too low or not considered a risk factor for sage-grouse by the initial matrix team. Those modifications were integrated into this text, reviewed by the North Central Local core group and routed back to the initial team members on two different occasions. The first was an e-mail of the document from the North Central Local. The second was a hard copy from the University of Nevada Cooperative Extension Office / Humboldt County mailed out January 14, 2004. The document not only went to those who attended the first matrix team meeting, but to all the permittee's in the area. The hard copy was accompanied with a cover letter explaining there had been some modifications, encouraged review of the document, solicited comments, offered an additional meeting in Orovada to discuss changes, and provided a due date (2-06-04) so comments could be incorporated into the document at the next North Central Local Planning Group meeting on February 12, 2004. No comments were received relative to the content of the text by that meeting. One indirect call from a permittee (not in attendance at the matrix team meetings) was received regarding the entire sage-grouse planning process and how it could eventually impact their livestock operation.

The original matrix is attached with addendum comments indicating changes.

HABITAT QUALITY:

Note: *Italics indicate a specific risk factor identified in the matrix throughout the document.*

The risk assessment process identified several habitat related factors that may be adversely affecting grouse habitat; however, most other habitat features have an acceptable structure or state and are not adversely affecting the sage-grouse population. The primary habitat related problems are associated with the winter use areas. Habitat on the nesting and summer use areas generally has an acceptable vegetative composition, physical structure, and spatial arrangement. Isolated

problems occur at specific points but their effect on the entire sage-grouse population is small.

Most of the nesting and early summer use areas have adequate sagebrush cover, sagebrush density, and seed production. Various ecological sites that support Wyoming sagebrush, mountain sagebrush, and/or low sagebrush occur in a widespread heterogeneous mosaic. Sagebrush canopies (cover and height) are sufficient to provide nesting, thermal and escape cover. There are no extensive areas on the early nesting and summer use areas with sagebrush that are too low, too tall or too dense to support good nesting habitat. Herbaceous cover on these same seasonal use areas, are sufficient to provide good vertical and horizontal cover. Lack of desired forbs does not appear to be a limiting factor, especially in the early nesting use areas. Limited blood work in 2002 indicates that hens coming off winter ranges were in sub-optimal condition, but became healthy once the forb growth initiated in and around lek sites. Visual observation has found abundant insects on the nesting, early brood and summer use areas, which suggests this important diet component is adequate.

When gaps between the ground and sagebrush canopies (umbrella effect) are common there can be less hiding cover from predators, especially if herbaceous plants are absent or the sagebrush provides limited vertical structure. Gaps between the ground and sagebrush canopy are largely limited to the periphery of some meadows and the periphery of some open water sources in summer use areas. The problem is relatively small compared to the overall spatial scale of the PMU; however, the removal of potential hiding cover in these late summer high concentration areas could result in increased predation losses. The current risk is low at the scale of the entire PMU (but moderate in some watersheds); low when projected into the future, with the potential to become moderate without proactive management measures.

Widespread wildfire on low-elevation winter use areas the past 20 years has resulted in large areas *being converted to monotypic communities of annuals (largely cheatgrass)*. These areas have a higher risk of ignition than sagebrush/bunchgrass sites, and typically have much faster rates of spread once ignition occurs. Early nesting and intermediate summer use areas often are adjacent to the expansive cheatgrass areas. The large perimeter of the cheatgrass areas, their high ignition potential, and their higher potential rates of spread create an increased risk to adjacent unburned nesting and early summer habitat fire and the establishment of cheatgrass, particularly on south facing slopes. More frequent fire cycles, expansion of annuals to higher elevation sites, and the loss of sagebrush to either type conversion or native perennials have influenced both nesting and summer use area in the Hoppin Hills, Double H's, north end of Kings River, Dry Creek, south Ninemile, Shyster, Mud Creek, and Wilder. The number of active leks previously located in many of those sites was never determined through intensive aerial surveys prior to many of the wildfires. Therefore, a quantifiable habitat loss rate cannot be accurately determined. Additional habitat loss is largely uncontrollable without extensive vegetation treatments and manipulation, and even then is not guaranteed. Doing nothing will guarantee the loss of additional habitat from fire and subsequent cheatgrass establishment.

Sagebrush cover on traditional winter range (largely Wyoming sagebrush) use areas has been dramatically reduced by wildfire, and cheatgrass has established on many sites. These sagebrush sites are very arid and have high variability in precipitation within and between years, which results in infrequent recruitment of sagebrush, and desired bunchgrasses and forbs, when parent plants are present. The low-elevation sites were historically overgrazed shortly after settlement depleting most of the desired herbaceous vegetation. The loss of desired herbaceous species, and poor recruitment from little or no seed production and variable precipitation, combined with the arrival of annual grasses that occupy interspaces between shrubs creates a situation where sagebrush communities are neither resistant nor resilient to fire. Approximately 153,000 acres of sagebrush habitat have been lost or heavily influenced by wildfire since 1985 within this PMU. The majority of these sites have been type converted to annuals with little or no regeneration of sagebrush, and none is expected given the presence of annuals, the lack of adapted plant materials to compete with cheatgrass, the absence of effective control methods for cheatgrass, and the distance from significant fire suppression forces. Even though some areas might have isolated perennials responding, the loss of sagebrush has eliminated effective use of these sites for grouse to be sustained and enter into the breeding season in good condition. Again, limited blood work from some of these areas in 2002, considered to be a relatively open winter, indicated the grouse were in relatively poor condition. As stated above, the grouse nutritional levels improved dramatically following the greenup of forbs. However, an average or severe winter (heavy snow cover and cold) is likely to result in substantially sub-optimal nutritional levels, which may adversely influence survival and initial production levels.

Over mature sagebrush in extensive monocultures is rated as low on a spatial scale and low to moderate on a temporal scale into the future. Most of the more productive sage-grouse summer range has a very diverse mosaic of sagebrush habitat types. Many of the mountain sagebrush sites are old and dense, yet they have an ample understory of perennial grasses and forbs. Many of the winter use areas have extensive monotypic stands of Wyoming sagebrush, with little or understory of perennial grasses and forbs. Both radio telemetry and ground surveys indicate these areas are among the most heavily used sites during winter. Due to their limited spatial extent (distribution), their long-term protection (defined as resistance and resilience to change) is essential. Large-scale vegetation manipulation to improve these sites should be postponed until other sizeable winter use areas have been restored (with sagebrush), and then should be implemented only to improve the resistance and resilience of the sagebrush community on these sites. The time period for achieving this state will be decades.

Noxious weeds currently present a low risk across the majority of the PMU. Populations of Hoary Cress, Bull Thistle, Tall Whitetop, Russian Knapweed, Medusahead, Scotch Thistle, Spotted Knapweed, Canadian Thistle, and Rush Skeletonweed is widespread in similar habitat types in southeast Oregon and Southern Idaho, and could become pronounced in the near future. The initial establishment and occupation of habitat by noxious weeds is generally associated with disturbed sites such as burns, roads, stock handling facilities, campsites, mines, and eroded stream channels. All these features occur in the PMU; therefore, noxious weeds have the potential to become well established and spread rapidly, particularly if a regular inventory and treatment program is not implemented. All meadows, riparian areas, and disturbed sites are susceptible to the

establishment of multiple species of noxious weeds. Once established, these species can invade undisturbed sagebrush sites, especially nesting and early brood rearing habitat. The risk factor is indirect relative to sage-grouse habitat, controllable, and predictable.

Current Issues Identified with Moderate or Higher Risk

- Type conversion of winter sagebrush use areas to annuals by wildfire
- Loss of sagebrush on nesting and early summer use areas by wildfire

Conservation Goal to Address Current Issue

1. Protect remaining critical winter use sagebrush sites throughout the PMU and contain/reduce the spread of annuals and noxious weeds
2. Actively protect the remaining unburned portions of the nesting and summer use areas within the PMU from wildfire.
3. Recover those sites dominated by annuals to those supporting healthy forb, perennial grass and shrub components. More importantly, encourage the science to complete that task.

Objectives to Attain Current Conservation Goals

1. Decrease the potential for large catastrophic fires through manipulations of fuel loads and connectivity.

1a. Establish wide (up to 300 ft.) green-strips of low flammability perennial grasses between cheatgrass areas and unburned sagebrush/grass habitat types. Initial efforts should be centered on key winter use areas.

- Thacker pass green-strip treated 2003/BLM
- Washburn green-strip scheduled 2004/BLM
- Others proposed over next few years/BLM

1b. Once functional green-strips are in place, work toward establishing sagebrush and desired perennial herbaceous species in the initial green-strip, while creating a replacement green-strip to replace the original site.

1c. The Federal agencies (USFS, BLM, NRCS) work to develop plant materials for desired species that are adapted to the 6-10 inch precipitation zone, for revegetation of low elevation Wyoming sagebrush sites that typically transition to cheatgrass (or other annual species) following catastrophic disturbance.

1d. Spray pre-emergent herbicides to reduce the competition from invasive plants such as cheatgrass and promote the release of perennial grasses where evident. These applications could be sprayed in corridors to reduce fuel.

- Applications of herbicides are limited, as certain products do not have rangeland labels. BLM and other resource management agencies promote and help expedite the clearance and use of safe herbicides for these types of applications on BLM lands.

2. Evaluate sites with mature sagebrush to determine those that are likely to remain as grassland following fire for extended periods because current seed production from sagebrush is inadequate for rapid establishment to occur. Treat subsets of these areas to remove decadent sagebrush and re-establish seed producing plants.

2a. Thin dense stands of sagebrush with spike, or similar herbicide, or appropriate mechanical treatments that do not adversely effect understory herbaceous species. The objective is to reduce the continuity of highly flammable sagebrush that produces long flame lengths, without eliminating sagebrush or seriously reducing mid-term nesting quality of the area. Treatments will be staggered in space and time (specifics require additional site specific research) to create a heterogeneous mosaic sagebrush community types with different size and age classes of sagebrush.

Funding: Obviously, a large portion of the responsibility and funding for the above objectives is tied to the Winnemucca BLM Field Office. However, assured funding and budgets to accomplish those objectives is another matter. If priority objectives for this PMU, and others around the state, are going to come to fruition then a collaborative effort needs to be put forth to secure a more stable budget. The North Central Local Planning Group recommends that the Governor’s Sage-Grouse Conservation Planning Team, Governor’s Office, NDOW, Nevada legislature, BLM and all other federal resource agencies collectively attempt to secure a funding base to implement the objectives as they are identified for this PMU and the statewide priority list.

Future Issues Identified with Moderate or Higher Risk

- Increased loss of winter, nesting and summer use areas to annuals post wildfire
- Excessive loss of sagebrush to perennial grasses post wildfire
- Increase in Noxious Weeds

Conservation Goals to Address Future Issues

1. Re-establish sagebrush on winter range areas that have no sagebrush
2. For sagebrush habitat types used for nesting and early summer brood rearing increase their resistance and resilience to vegetation change to grassland (perennial or annual)

3. Prevent the widespread establishment of noxious weeds in the PMU

Objectives to Attain Future Conservation Goals

1. Continue “Objectives to Attain Current Conservation Goals” as stated above in order to address goals 1 and 2.

- 1a Continue to put emphasis on research work to develop plants adapted to low precipitation zones (6-10 inches) that will actively compete with cheatgrass and other invasive plants and yet allow the reestablishment of native plant communities. This is a west wide dilemma and needs a concerted well-organized and funded research cooperative effort to move toward resolving the problem. The problem is not only critical to sage-grouse, but all sagebrush obligate species.

- The Governor’s Sage-Grouse Conservation Planning Team, the Governor’s Office, NDOW, Nevada legislature, BLM and all other federal resource agencies collectively pursue the creation of a west-wide cooperative research center to study this problem and develop methodologies to reverse the sage-grouse habitat losses associated with this issue.

3. By 2005 initiate a survey of all roads, disturbed sites (natural and anthropogenic), water sources and streams, meadows, camp areas, stock handling facilities, and other habitat types where noxious weeds are likely to establish first. Select a random sample of additional upland sites for survey. For all populations found develop a strategic treatment plan following the principles of integrated weed management.

- The Governor’s Sage-Grouse Conservation Planning Team, State of Nevada, NDOW, the legislature, and the BLM pursue the creation of a countywide weed district. Secure funding for a position within each county. Given even that level of manpower, survey and inventories should be established on a priority basis as it relates to key sage-grouse areas.

HABITAT LOSS / QUANTITY:

Of the 12 risk factors identified within the matrix for review by the assessment team and the North Central Local Planning group, only two were identified as not being risk factors associated with habitat loss or the total amount of habitat available. Those identified as not representing a level of risk for sage-grouse because of habitat loss/quantity are: *loss of sagebrush-PJ encroachment, loss of sagebrush-urban expansion or other development*. The effect of one risk factor, *impeding sage-grouse migration*, is unknown. There is insufficient data to determine if sub-populations in the PMU have changed their movement patterns and no longer use some sagebrush areas because large fires have created habitat voids they do not cross.

Loss of sagebrush to wildfire and subsequent conversion to either perennial grasses or annual grasslands were the two most significant risk factors identified. Most of the conversion has occurred on winter, nesting and early brood use areas throughout the PMU. The shortened interval between fires and the increasing size of fires is steadily increasing the amount of annual grasses and affecting sagebrush habitat at higher elevations and/or summer use areas. Again, approximately 153,000 acres of sagebrush habitat have been impacted by wildfire since 1985. The spatial scale impacts were assigned a moderate to high level of risk as currently assessed. Future impacts are likely to be moderate to high, as fuel loads and continuity are not expected to decline. The loss of sagebrush habitat and its conversion to either perennial grasses or annual grasses are not controllable at this time, with existing resources (funds, personnel, and technology). Losses will occur in the future. Given the high productive potential at mid and high elevations in this PMU it is possible sagebrush will return to many sites following fire. It is unknown if the rate of return will equal or exceed potential losses over the next 20 years. The rate of loss on low-elevation sites is very likely to exceed the rate of re-establishment at low elevation Wyoming sagebrush sites, assuming conditions experienced the past 20 years do not change.

The loss of sagebrush to mining has currently been rated at a relatively low impact to date. Historical exploration for gold and silver has resulted in minimal surface disturbance with no serious exploration or interest into the future based on recent activity levels. Both Uranium exploration and Hectorite exploration and removal have been rated at a low risk level. However, with Hectorite reserves being limited on a worldwide perspective, the potential for increased sagebrush losses to this type mining could easily escalate into the future based on demand. Mercury mining operations (Cordero Mine area), 1930's through the early 1990's, disturbed some winter, breeding and early nesting habitat around the north end of the Hoppin Hills. The sagebrush has reestablished over much of the disturbed area with only the tailing ponds, roads and areas around the structures still not reverting back to sagebrush habitat. Resurgence in the mercury operation is unlikely, but interest in recovering Gallium from the site is being investigated. Only Hectorite and Gallium exploration and active mining could pose a threat to sage-grouse habitat in the future and is rated as a low to moderate threat in the future.

Loss of sagebrush – change to perennial grass seeding: This risk factor impacted sagebrush habitat significantly more when wheatgrass seedings were widely implemented from the 1950's through the early 1970's (Washburn, Jordan Meadows, Thacker, Houghland, Denio, and Quinn River Seedings). Most of these seedings have been encroached by sagebrush and the initial negative effects have declined significantly. The older seedings have site stability following wildfire, and typically include sagebrush. These seedings, if initially successful, are expected to transition to shrub/bunchgrass mixes with time, benefiting sage-grouse over time. Additional seedings, solely for livestock productions, are unlikely. The long-term risk from large-scale seedings of monocultures perennial grasses, for only livestock forage production, is low and unlikely to occur. Some sagebrush will be removed in sage-grouse use areas in order to establish green-strips for the ultimate protection of key habitat areas. That activity is currently being conducted with the concurrence of the involved resource agencies. The goal is to create long-term stability despite some short and mid-term losses.

Loss of meadow habitat and loss of access to meadows (i.e., late summer brood rearing) is a moderate to high risk over much of the PMU. In the past 20 years substantial improvements have occurred in many lentic or lotic sites throughout the PMU. BLM has conducted functional assessments on 140+ miles of the PMU involving just lotic ratings. The majority assessed as functioning at risk/static 40+%, properly functioning 20+%, functioning at risk/downward trend 15+%, functioning at risk/upward trend 8+%, and not functioning approximately 5%. Assessment work for the lentic sites has not been accomplished for the majority of the PMU. The causes for these classifications are many and include natural incising, damage from beaver activity, roads in meadow systems, wildfires, grazing impacts, and interactions of these other land uses and ecological processes. The current biophysical state of meadow habitats still support large populations of sage-grouse; however, at risk and have limited ability to withstand natural events that occur at 25 to 50 year cycles. Neutralization of damage and improvement of the habitat will, in the long term, maintain and stabilize sage-grouse populations, especially in late summer use areas. The management decisions associated with current allotment evaluations and recently implemented standards and guidelines seem poised to promote and maintain improvements into the future. Future effects from land uses and management actions are expected to have substantially fewer adverse impacts (if any) than resulted from past actions.

Remove / divert water supply: At the scale of the entire PMU, the removal/diversion of water supplies is a low to moderate risk to sage-grouse. There is a substantial amount of free (unconfined) surface water available for sage-grouse. Some site-specific spring developments that transport water to a trough and/or a series of troughs have created a problem of drying up meadow habitat or diminishing water at the spring source. The problem is a low risk factor during average or above average precipitation years, as flows are generally sufficient enough to provide water on the ground surface. During drought years the problem can be significant because free surface water dries up at the source, and the troughs may not collect enough water for overflow to occur and reach the ground. Some pipeline developments in the PMU divert water from traditional use areas (meadows and water sources) to other pastures in mid summer, forcing sage-grouse to relocate to areas with available water. Regular evaluation of the impacts of ongoing management actions and appropriate reengineering of water developments (where necessary) should mitigate/minimize future problems. Also, very few troughs within the PMU have bird escape ramps so as to allow sage-grouse, other avian or small mammalian wildlife species a way to exit the trough if they fall into the water. Current measures are being taken to install bird ramps throughout the PMU.

The Loss of Lek Sites: *The loss of Lek sites from the construction of man-made features or the loss of habitat has been rated a low current risk. The construction of a major power line into Kings River through Thacker Pass area was probably responsible for the loss or relocation of one known lek site many years ago. The number of leks lost to wildfire and subsequent habitat disruption is unknown, as a concerted aerial survey to locate leks was not initiated until the early 1990's. The potential construction of wind-monitoring and wind power generation facilities towers is a potential threat to known lek sites. More recently, a 170 ft.*

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wind-monitoring tower was constructed near one lek in 2002, but its impacts cannot be fully assessed because the area completely burned two years ago. The tower has since been removed in late 2003 for an undisclosed reason (lack of consistent wind, access, etc.). Additional construction of a wind-monitoring tower, within the same general area, was never undertaken due to its known proximity to leks. Status of additional towers into the future is unknown at this time.

Loss of Habitat Connectivity (habitat fragmentation): The large wildfires in the Double H's, Montana Mts., Trout Creek Mts. and Bilk Creek Mts. during the past two decades is believed to have fractured the habitat connectivity in a number of locations. The removal of extensive tracts of sagebrush canopy (hiding cover) in areas that sage-grouse broods must traverse on the ground as young broods move from nesting to early brood and/or summer use areas renders these areas unusable, or increases the risk from predators. In essence, the ability to move relatively safely from one use area to another as food source availability changes has declined in parts of the PMU. Winter movement is often accomplished by flight with older birds. Connectivity between late summer use areas and winter use areas is not as crucial. The loss of that habitat connectivity is difficult to measure/quantify, but is believed to have had a moderate to high impact on the various sub-populations in the PMU. This risk factor, based on continued/anticipated habitat loss to wildfire, should be rated as high.

Current Issues Identified with Moderate to Higher Risks

- Loss of Sagebrush from fire – perennial component remains
- Loss of Sagebrush from fire and conversion to annual grasslands
- Loss of meadow habitat
- Remove/divert water supply (low-mod)
- Loss of habitat connectivity

Conservation Goals to Address Current Issues

1. Wildfire related issues; see Conservation Goals for Current Issues in the “Habitat Quality” section.
2. Inventory meadows throughout the PMU and classify as to long-term sustainability. Initiate protection measures and or mechanical or structural intervention to stop head cutting in those most in jeopardy in sage-grouse habitat.
3. Conduct a comprehensive hydrologic spring analysis. Identify spring boxes and associated pipelines that are over dedicated for the amount of water produced at each site. Protect the spring sources with fences and reengineer the collection source and distribution system to allow for water on the ground at the source and each trough.

4. Identify key segments of habitat that have been disrupted and created a loss in habitat connectivity. Prioritize reestablishment of those sites in relationship to sage-grouse use areas.

Objectives to Attain Current Conservation Goals

1. Wildfire related issues; see Objectives to Attain Current Conservation Goals in the “Habitat Quality” section.

2. Schedule a minimum of three mechanical and or structural projects annually, starting in 2005, to recover water table loss associated with incising or head cuts in key sage-grouse habitat. Herbicide applications should be applied as necessary to control noxious or invasive species as a result of mechanical or other disturbance activities.

3. Schedule a minimum of three spring box collection projects annually; starting in 2005, to fence and or reengineer to assure ground water is available at the spring source and at each trough.

4. Schedule a minimum of one habitat restoration project annually, starting in 2005, to reestablish the initiation of a native plant community to close the gap creating loss of sage-grouse habitat connectivity or fragmentation. These projects are tied initially to experimental revegetation trials to establish the methodologies involved in accomplishing this objective (see Habitat Quality- Objectives to attain current goals #1c. and objectives to attain future goals #2.).

4a. Identify habitat restoration projects on a priority basis in all habitat types (R values). Initiate projects to prevent loss of habitat connectivity in those sites where applicable (Habitat Quality- objectives to attain current conservation goals, #2a.). From 2005-2008 identify habitat with highest potential for manipulation.

Future Issues Identified with Moderate to Higher Risk

- Loss of Sagebrush from fire – perennial component remains
- Loss of Sagebrush and conversion to annual grasslands
- Loss of meadow habitat
- Remove/divert water supply (low-mod)
- Loss of habitat connectivity

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Conservation Goals to Address Future Issues

1. Continue objectives outlined in “Conservation Goals to Address Current Issues”

Objectives to Attain Future Conservation Goals

1. Continue objectives outlined in “Objectives to Attain Current Conservation Goals”.

FIRE

The risks associated with fire can reflect either too much or too little fire. The concept of too much fire (disturbance on shrubs) concerns not just the total acreage burned, but also the arrangement of the fires in both space and time. One fire every 50 years that burns 50% of the PMU has a very different effect than 100 fires over 50 years, that burn 50% of the PMU. The former results in two habitat conditions: decadent sagebrush with poor resistance and resilience to undesired vegetation change and grassland that often takes decades to have sagebrush cover that benefits sage-grouse. The latter creates a mosaic in fuel loads and fuel connectivity that reduces the risk of a large catastrophic fire. Also, it provides a broad spectrum of vegetative composition with respect to shrubs and the herbaceous understory. This mosaic is more likely to meet sage-grouse needs across a larger spatial scale than areas that have one to several large fires, with long recovery periods.

The concept of too little fire (disturbance) affects habitat potential by allowing extensive monocultures of highly flammable closely spaced shrubs to develop. On Wyoming sagebrush, basin big sagebrush, Lahontan sagebrush, black sagebrush, many low sagebrush sites, and some mountain sagebrush sites high sagebrush canopy cover (15-30%+, depending on the ecological site) results in a corresponding decrease in desired herbaceous species. Mountain sage sites with high precipitation and mountain brush sites usually have sufficient precipitation to permit herbaceous species to be common even with high sagebrush cover. Fire or some other disturbance that decreases shrub cover but results in rapid increases in desired herbaceous species maintains a balance between shrub and herbaceous dominance when fires are relatively small, have high perimeter to interior ratios, and are widespread in both space and time. The adverse effects on sage-grouse from too much wildfire have been discussed extensively in the previous habitat narratives. In some instances, too little fire can lengthen the evolved fire cycle preventing sagebrush communities from regenerating and create successional age classes that provide a wide variety of seral habitat types. The assessment team evaluated fire as a separate risk factor with the following impacts being derived from the risk assessment matrix.

Too little fire, within the Lone Willow PMU, was rated as a low risk factor for sage-grouse. *Excessive decadent sagebrush* stands or *loss of desired herbaceous understory* from lack of fire, as a viable component within the PMU, are considered to be a low current risk for sage-grouse habitat. Extensive decadent stands of sagebrush were identified as a possible moderate risk factor on winter ranges into the future. That concern does not appear to be very likely as the winter ranges are currently being converted to annual grasslands from wildfire much faster than they are being restored to sagebrush with successful rehabilitation projects. Decadent stands of sagebrush might well become a factor on the summer range use areas into the future, but will require widespread treatments (in space and time), not one to several large-scale prescriptions. The opportunity to use fire as a large-scale management tool for habitat manipulation purposes is currently rated as a low priority and will continue into the future. Given the amount of habitat that has burned and the risk for prescribed fire to escape vegetation manipulation treatments on sagebrush sites in this PMU, focus should be placed on mechanical/chemical treatments that are guaranteed not to directly affect areas outside the designated treatment area.

Too much fire: Sagebrush cover has been lost on about 153,000 acres in the last 20 years. Some of the burns occurred in nesting/early brood rearing habitat, and much of this area either is, or has the potential to return to a sagebrush/bunchgrass site. Older burns have sagebrush returning, while younger burned areas are still largely grasses and forbs. Sagebrush on low elevation winter use areas has not regenerated, and the abundance of cheatgrass (and associated re-burns) suggests it will not return in the foreseeable future. The loss of winter habitat is the most significant threat to this population on a landscape scale. Recent telemetry data in the Montana Mts., in 2001, found that all grouse with telemetry collars (15) wintered at low elevations on the east side of the mountain. Aerial and ground follow up on the telemetry collars revealed that the sage-grouse are utilizing the only large tract of sagebrush remaining in the eastern half of the PMU. The use area, from Crowley Creek north to the Oregon line, is the only contiguous stand of low to mid elevation sagebrush available for the sage-grouse. Until telemetry work is conducted in the Trout Creek, Bilk Creek and Whitehorse Mts. in Oregon, we will not fully understand all interrelationships between the Nevada and Oregon portions of this large contiguous stand of sagebrush. It is suspected that sage-grouse from Oregon may well utilize the same winter use area supporting the Montana Mts. population. The loss of winter habitat has a direct influence on the sage-grouse population. The continued loss of habitat is not fully controllable given current technology and resources, but it is predictable that additional losses will occur well into the future. The continued loss of sagebrush habitat into the future is considered to be a high risk. The BLM has identified the key winter use area (described above) as a very high priority for full fire suppression efforts to minimize additional losses of this habitat. Vegetation management in and adjacent to the winter use area will be necessary to reduce the risk of its complete loss.

Converted to cheatgrass: is the primary result of the wildfires in habitat below 6500 ft. in elevation throughout the PMU, during the past 20 plus years. Typically hot summer wildfires will kill the native forbs, perennial grasses and shrubs within the burn area. The high intensity of the fires removes all vegetation and facilitates the establishment of annual grasses the first two years after a fire. On sagebrush sites without a well developed bunchgrass understory, cheatgrass is very likely to dominate the site within two years of the fire because there are no competitive bunchgrasses to competitively exclude the annual grass. Usually there is a one-year window of opportunity to establish desired/acceptable seeded species to prevent cheatgrass from assuming ecological dominance. If acceptable species are not established in that period cheatgrass will assume dominance by the second year. The establishment and dominance of cheatgrass permanently converts native plant communities to a monoculture of annuals with insufficient cover from species used by sage-grouse to provide any functional habitat. All the habitat requirements for sage-grouse relative to nesting cover, early brood survival, late summer use and or winter use are absent for at least many decades and perhaps permanently. Encroachment of sagebrush or other native forbs and perennial grasses is considered to be very low or nonexistent in many cheatgrass areas, because seed sources from surviving native plants are not sufficient to reoccupy the site. The native vegetative ecosystem is replaced or converted to annual grassland with other invasive annual plants and possibly numerous noxious weeds. This well known process has obvious direct impacts to sage-grouse, is not controllable at this time, and is predicted to continue into the foreseeable future. This risk factor is rated at high both currently and into the future.

The conversion of sagebrush/bunchgrass habitat to perennial grasses: is a moderate to high risk on much of the nesting, early brood, and winter use areas for sage-grouse. Following fire, sagebrush sites that are not converted to cheatgrass monocultures typically become perennial grass sites with little or no sagebrush component. The sites are generally large in size and offer little cover for sage-grouse. Those sites provide a medium for sagebrush to reoccupy these sites, but the process can often take decades, particularly if seed sources are absent and the affected area is very large. Most sagebrush seed drops within 1-m of the mother plant. Sites where native species reoccupy the site have good to mid to long-term potential to produce sagebrush, but short-term adverse effects can be widespread if one or more large (tens to hundreds of thousands of acres) fires occur over a

short period of years. Fire in and of itself is not the critical issue. The issue is size and temporal scope of the fires. Most of the PMU above 6,500 ft. has an abundant understory of perennial grasses and forbs. If large areas burn in a brief period, much of the nesting/early brood rearing habitat would convert to perennial grassland seriously impacting sage-grouse nest success for 7 to 20 years, or longer. At low elevation sites, the only hope for site stability is reseeding to perennial grasses and subsequent re-establishment of sagebrush. The process will take much longer at low elevations than at high elevations, and has a much higher risk of failure. Given that large tracts of high elevation range has burned in some areas, and perennial grasses are abundant in the understory at higher elevations there is a high risk that much of the PMU could be converted to perennial grassland in the next 10-20 years.

The Lack of sagebrush islands in many burns creates several risks for sage-grouse. First, on winter use areas islands of sagebrush can be the only source of sage-grouse forage. Second, sagebrush islands are an important seed source on large burned areas because seed dispersal occurs over very short distances. The farther seed must disperse the longer the recolonization process takes. Potential habitat remains sub-optimal or non-usable for much longer periods. Fire behavior on hot summer burns, often results in complete burns that leave few (if any) and/or very small islands of sagebrush. Many islands that do remain are potential consumed by small residual fires that remain after the main front has passed, or are burned out by suppression crews to reduce spotting potential across the black-line. The lack of islands removes any opportunity for sage-grouse to use the area and eliminates the expansion of Wyoming sagebrush to reoccupy the area from the remaining plants. All interior islands that remain post fire facilitate a quicker reestablishment of sagebrush, compared to relying only on the encroachment of new plants from the perimeter of the primary fire line. Small ratios of perimeter length to interior area will result in a longer colonization process for sagebrush. The current risk from lack of sagebrush islands is rated as high, especially in those areas below 6,500 ft. Past fires have left few sagebrush islands. High elevation fires have also left few islands, probably because of high fuel loads and the continuity of the fuel load. This risk has a direct impact on the sage-grouse, is predictable and somewhat controllable into the future with proper fuel management and/or revegetation. Suppression efforts into the future that will direct focus on retaining much of the sagebrush interior habitat will provide a mosaic of additional habitat and promote sagebrush/grass community expansion through retention of native seed sources and reduce the overall cost of rehabilitation.

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Potential for large fires with the type conversion of native sagebrush/grass communities to annual grasslands, comprised of monotypic stands of cheatgrass, is rated as a high risk factor into the future. With cheatgrass occupying so much of the old burn site; the likelihood of more frequent fire cycles has increased tremendously. The more frequent the fires, the higher risk to associated unburned sagebrush communities. The risk has a direct impact to the sage-grouse, is not controllable at this time and predictable into the future.

Current Issues identified with Moderate or Higher Risk

- Too much fire
- Loss of sagebrush
- Large tracts of habitat converted to cheatgrass
- Large tracts of habitat converted to perennial grasses
- Lack of sagebrush islands

Conservation Goals to Address Current Issues

1. Refer to “Conservation Goals to Address Current Issues” in the “Habitat Quality” section.

Objectives to Attain Current Conservation Goals

1. Include “Objectives to Attain Current Conservation Goals” identified in the “Habitat Quality” section.

1a. Over the next five years, identify sagebrush/bunchgrass habitat types that have poor herbaceous composition and/or production in the understory, and have a high potential for being restored to diverse sagebrush/bunchgrass habitats (i.e., little or no annual grasses) with standard mechanical, chemical, or cultural (fire) control methods. The initial focus (year 1) will be in R-0 habitats or other areas identified as current important grouse habitat. Other areas will be assessed in the subsequent four years.

1b. Identify areas of sagebrush/bunchgrass habitat types that have crossed transition thresholds and do not have the potential to return to sagebrush/bunchgrass habitat types following fire, and are likely to become cheatgrass monocultures following any fire.

- Isolate areas with green-strips or other fuel reduction projects.

1c. Revise BLM resource management plans to identify these locations as high priority suppression sites, and ensure local and regional suppression organizations know where high priority suppression habitat is located.

- Annually, BLM resource personnel and the fire management personnel meet prior to the wildfire season to insure priorities are still in place and make adjustments or additions as identified or necessary. Clarify the importance of saving as much sagebrush habitat as possible including interior patches within the fire line perimeter.
- From that meeting, make sure the priorities are incorporated into regional and NFP priority listings.

1d. For areas where conversion to cheatgrass is likely following fire, identify locations based on site potential (soil depth, water holding capacity, aspect, etc.) that have the highest probability of being converted to sagebrush/bunchgrass habitat type if chemical and/or mechanical treatments are combined with fall/early winter (Sept-December) reseeding programs.

Future Issues identified with Moderate or Higher Risks

- Too much fire

- Potential for large fires
- Loss of Sagebrush
- Conversion to cheatgrass
- Conversion to perennial grasses

Conservation Goals to Address Future Issues

1. Continue with “Conservation Goals to Address Current Issues”

Objectives to Attain Future Conservation Goals

1. Continue with “Objectives to Attain Current Conservation Goals”.

HARVEST AND POACHING

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Research to determine the harvest level in the Lone Willow PMU was conducted by NDOW in 2001, 2002 and 2003. A large scale banding project in the Montana Mts. during the summer months and follow up on total number of marked birds harvested during the hunting season provided both a population estimate and an estimated percent kill by the hunters. In addition, wings were collected from all the birds harvested in order to determine sex and age from feather replacement patterns and size of certain feathers. The Montana Mts. harvest is thought to comprise 90%+ of the total harvest in the PMU. The research in the Montana Mts. was conducted in response to concerns by NDOW biologists and the general public about excessive harvest on this population. The area annually supports one of the highest densities of hunters, with moderate to high success levels each year. Research continued in 2003, and results indicate overall harvest is within safe parameters relative to overall percent harvest and the composition of the kill.

The following risk factors were considered by the assessment team: *Excessive harvest in addition to normal mortality rates, excessive harvest resulting in a smaller breeding population, high harvest rates are limiting the population size, and excessive harvest of adult hens.* Rather than responding to each category, the assessment group opted to utilize the research data from NDOW to address the risk factors with the data collected thus far.

The research data indicated a harvest rate of 8.2%,10.6% and 9.2% of the population in 2001,2002 and 2003 respectively. These harvest levels are within the safe parameters for this population, based on previously published research. The other primary concern was the composition of the harvest, or more importantly the total number of yearling and adult hens harvested annually. The percent of hens harvested was 28% in 2001 and 18% in 2002 and 25% in 2003. These harvest rates, within the overall kill, are acceptable and not believed to adversely impact the production potential of this population. Both overall harvest level and percent adult hens in the harvest are a low to moderate risk in this PMU.

The balance of the harvest within the PMU comes from the head of Kings River, throughout the Bilk Creek Range, with little harvest in the Double H Range. In these locations, hunter density is lower and is defused over a larger area. The harvest rate is believed to represent less than 5% of the population. Given the low percent of harvest within the balance of the PMU, smaller breeding populations or excessive harvest of adult hens is a low risk factor.

Poaching is a risk factor that must be considered as a part of harvest; however, it is not readily measured or accurately assessed. Generally, it occurs during the summer months in association with other activities in sage-grouse use areas. The loss through poaching within this PMU is not believed to be significant and thus considered a low risk factor. Very few people use the area, except in hunting season, because of its long distance from major population centers and lack of summer recreational opportunities (fishing, boating, hiking trails, etc.). Mining related work, livestock operations and big game scouting comprise the bulk of the summer activity. Other areas surrounding this complex such as the Santa Rosa range and Pine Forest range attract more of the general summer outdoor recreational activity.

Future habitat loss/ fragmentation and its influence on the production potential of these populations could increase potential risks associated with harvest. It is difficult to assess or project these impacts into the future. It is safe to assume that current harvest levels, applied on a much smaller population base (if it occurs), would result in an increased risk rating for the harvest and poaching risk factor. It is not known if diminishing returns for hunter harvest would coincide with a smaller population base, potentially reducing potential adverse effects from harvest.

Current Issues identified with Moderate or Higher Risks

None identified at this time.

Management recommendation:

1. Continue NDOW marking and recapture project over the next two years (during an anticipated downward trend in the population cycle) to assess overall harvest rate and the composition of harvest. This project will help determine if harvest rates become too excessive or the composition of the kill shifts too much to the adult hen segment. The information will determine if harvest rates are a risk factor to the population during low population cycles. If this is identified as a short-term risk factor, it may possibly influence season and bag limits to correspond with natural cycles.

- Funding from NDOW and or other sources to continue this project
- The results of the three-year project should be written up in a professional scientific journal or technical bulletin, peer reviewed and shared within the resource management communities. The information needs to be shared at this time, not wait until it is completed at some time in the future. Once the entire project is concluded, update that information in the same journal or technical bulletin.

Future Issues identified with Moderate or Higher Risks
(based on the potential for less available habitat in the future)

- Harvest levels
- Excessive harvest of adult hens

Conservation Goals to Address Future Issue

1. Establish season and bag limits for sage-grouse for this particular PMU and not lumped with the balance of Humboldt County or a geographic region of the state.
2. Emphasize additional wildlife law enforcement activity in the area if poaching is identified as a problem or appears to be increasing.
 - A separate and specific activity that can be integrated into both NDOW and BLM enforcement programs.

Objectives to Attain Future Conservation Goal

1. Continue with objectives outlined in “Conservation Goals to address Future Issues”.

LAWS, POLICIES, AND REGULATIONS THAT CONFLICT WITH BIOLOGICAL NEEDS

Laws, policies, and regulations can potentially conflict with both the biological and habitat requirements of sage-grouse. The potential effects on the ability to manage sage-grouse habitat and or populations are outlined below with a risk factor and rating assigned to each:

Poor access to monitor and inventory: At this time there are no restrictions from special land status designations on any of the PMU. The Disaster Peak Wilderness Study Area (WSA) (NV020-859) is 12,735 acres, and is located entirely in the Lone Willow PMU. All management activities in the PMU must not impair suitability for preservation as the WSA, and must be in concurrence with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM H-8550-1; 7/5/95). Access is limited to existing roads and ways. These roads and ways may be maintained as long as this activity does not cause new impacts that impair the area’s wilderness suitability. Secondary road maintenance in the WSA is not a routine project at this time. The risk factor was assigned a low rating for the current, future and potential.

Increased costs to manage or manipulate habitat: There are increased costs to the BLM to adhere to strict forage utilization criteria in response to standards/guidelines and terms/ conditions established by the BLM and USFWS Biological Opinions for Lahontan Cutthroat Trout (LCT) within the area. Also, management of uplands and riparian areas adjacent to waters in the PMU identified for reestablishment of LCT will increase management and monitoring costs (time and dollars) for management and habitat manipulation projects for LCT. The monitoring and project implementation phases for

LCT may dilute the monitoring efforts in most of the sage-grouse use areas. Uplands and in riparian areas adjacent to designated LCT streams are expected to have an increase in herbaceous species, to reduce erosion. On many sites, an increase in herbaceous species, even with a decline (but not loss) of shrubs would be expected to benefit sage-grouse. The rating for this type of risk factor is considered to be low, non controllable, and predictable.

Archaeological clearance and the costs associated with fire rehabilitation work and other projects have been much more involved and expensive in the past. However, it does not currently appear to be a controlling or limiting factor relative to the overall costs associated with fire rehabilitation efforts. The risk factor received a low rating, is not controllable, and does not appear as though it will increase in its rating status into the future as it pertains to fire rehabilitation work. If the expenses associated with archaeological clearance are too expensive for a fire rehabilitation effort, the decision to aerial broadcast seed maybe selected as an alternative over the preferred method of drilling. It is difficult to assess this risk factor at this time, but it should be monitored or captured in the future.

Prohibitions on Management Actions: Prohibitions on the use of certain herbicides (e.g. Plateau) to control annual grasses and other invasive/noxious plants can increase the risk that habitat manipulations to benefit sage-grouse will have a higher risk of failure. Regulations that restrict the use of herbicides on BLM administered land can decrease the success of post fire rehabilitation efforts, as well as attempts to convert sites dominated by annuals back to a sagebrush/grass community. Properly used, herbicides can reduce competition from weeds for several years, reducing the risk that fire rehabilitation or vegetation manipulation efforts will fail. The risk factor is considered to be moderate to high at the current level, depending on the potential area for treatment. The time frame surrounding clearance of certain herbicides into the future will determine the future risk of this factor.

All management actions in the WSA are subject to the Interim Management Policy. Physical management actions or techniques that alter vegetation and soils (e.g., guzzlers; mechanical, chemical, or biological vegetation manipulation; watershed rehabilitation, permanent structures, livestock developments, etc) will not be allowed/permitted; unless, they enhance wilderness values; are substantially unnoticeable; do not require maintenance involving motorized vehicles, and suitable alternative locations outside the WSA are not available. The rating associated with this risk factor is difficult to assess and is assigned a low value. Future risks could increase if unanticipated needs arise for sage-grouse and their habitat. The Animal and Plant Health Inspection Service (Wildlife Services) cannot utilize control measures in WSAs that are non-selective and cannot be directed at offending animals (i.e. M-44's, leghold traps, snares, etc.). Restricted predator control measures within WSAs are assigned a low risk (see Predator Section page 36).

All introductions, transplants, augmentations and reestablishment of fish, wildlife, and plants on public lands shall be done in accordance with the BLM 1745 manual.

Prohibition on techniques used to manipulate habitat: Regulations developed to implement the National Historic Preservation Act create risks to both sage-grouse and their habitat. These risks are related to 1) delaying rehabilitation efforts following wildfire (or

other disturbances to the habitat), and 2) preventing habitat manipulation treatments that may potentially damage artifacts located on or near the soil surface. In the past 18 years, the restricted use of tractor's, rangeland drills, and/or other heavy equipment has reduced and/or prevented fire rehabilitation efforts from succeeding. Aerial broadcast seeding to prevent damage to artifacts (usually obsidian flakes or discarded equipment used by early sheep herders or settlers) sharply increases the risk of seeding failure, compared to drill seeding. Also, the inability to use of any equipment on these sites limits the options available to rehabilitate/restore native plant communities. Often untreated areas convert to annual grasslands that are highly flammable. Subsequent fires easily spread into adjacent unburned sage-grouse habitat. Mechanical rehabilitation efforts alone do not guarantee a successful seeding or habitat manipulation; however, they enhance the odds for success. The use of heavy equipment in archaeological sensitive areas can result in more acreage burned when these "direct attach" tools cannot be utilized. The potential damage to artifacts from hot intensive summer fires (extreme heat) and the associated wind and sheet erosion following these events needs to be assessed. The potential damage from the heat and subsequent exposure to the surface from erosion to an archaeological site or random artifact may well be more damaging than habitat stabilization projects designed to negate the potential for large catastrophic fires in the future. The risk factor is considered to be high and will continue as such into the future.

Other potential prohibitions that parallel the drilling example above, but at a much smaller scale include moving roads off meadows, mechanical equipment use to install structures in meadows, water developments, fences around spring sources, etc. Depending on the site-specific projects to improve habitat for sage-grouse within this PMU, the potential exists for archeological conflicts to stem or negate projects intended to improve the overall habitat of the area for sage-grouse. In many instances, the preservation of the habitat may well secure the preservation of the artifacts. Until site-specific projects are identified, it is difficult to place a risk value on archaeological clearances for these smaller projects.

Create focus on single species management that may harm sage-grouse: Three species of wildlife, California bighorn sheep, pygmy rabbit, and Lahontan cutthroat trout, exist in the PMU, and could potentially generate special management considerations that impact sage-grouse and their habitat. California bighorn sheep occupy very little sage-grouse range on a yearlong basis, but their existence does affect the class of livestock within the area. Under current BLM policy, no domestic sheep are authorized in or around the Montana Mts., Double H Mts. or Trout Creek Range. Domestic sheep use rather than cattle, on sage-grouse and their habitat, is not known at this time and only speculative in nature. Domestic sheep can feasibly utilize more of the uplands and be controlled away from the riparian or upland meadows. The benefits to sage-grouse would be questionable and the likelihood of a viable operation, given the size of any of the allotments in those areas, is very questionable. The complete yearlong habitat requirements of the pygmy rabbit are relatively unknown at this time. Therefore, it would be purely speculative as to how specific or focused management actions for the pygmy rabbit would influence sage-grouse. In the interim, the management objectives for sage-grouse should benefit pygmy rabbits and other sagebrush obligate species. Both the bighorn sheep and pygmy rabbit are considered to be low risk factors as they pertain to specialized management actions that would adversely impact sage-grouse.

Habitat management considerations for Lahontan cutthroat trout, based on USFWS Biological Opinions in concert with input from other management agencies, has resulted in conservative livestock utilization levels use in many drainages in the Montana and Trout Creek Mts. In one instance, an entire pasture in the Rock Creek drainage was closed to livestock grazing to stabilize the upper watershed to benefit riparian and LCT values. After a number of years without livestock grazing there has been a build up in decadent herbaceous material. Sage-grouse trapping efforts, and limited telemetry follow up indicate that the grouse did not utilize the pasture as heavily as the surrounding grazed areas. The pasture is now reopened, and the integrity of the watershed has improved considerably. Long term closures to grazing on most or all of the meadow/riparian habitat, and associated buildup of tall, dense, herbaceous material is likely to impact the sage-grouse by reducing their ability to use the area. The risk factor is currently considered to be low relative to the amount of landscape involved with this type of treatment and more specific to given drainages at this time. Large treatments, over a more extensive landscape into the future, are considered a low to moderate risk to the sage-grouse in this PMU.

Current Issues identified with Moderate or Higher Risk

- Prohibitions on management actions (see above)
- Prohibitions on techniques used to manipulate habitat (see above)

Conservation Goals to Address Current Issues

1. Mitigate archaeological clearance process for habitat improvement projects.
2. Allow safe herbicide use on public lands to facilitate habitat improvement projects.

Objectives to Attain Current Conservation Goals

1. The North Central Planning Group does not believe the National Historic Preservation Act was intended to offset resource gains (particular those on a landscape basis) in order to preserve artifacts vs. archaeological sites.
 - State of Nevada Institute a commission of experts from the resources and the archaeological communities within state and federal government to:
 - a. Define archaeological site. Outline approved developments in and around those sites. Assess the losses to those sites from large catastrophic fires and subsequent erosion to expose sites to the surface. Are those identified losses doing more damage to archaeological sites than habitat stabilization projects?
 - b. Define artifacts. How does it relate to an archaeological site? Outline approved level of habitat improvement projects that may be undertaken in these areas.
 - After the results of this commission are determined:
 - a. Establish standards and guidelines throughout the state of Nevada, for resource personnel and archaeologists alike, to protect and enhance the habitat and yet not compromise the archaeological sites or artifacts and visa versa.

2. (see Habitat Quality section- Objectives to attain Conservation Goals- #1d.) Applications of herbicides are limited, as certain products do not have rangeland labels. BLM and other resource management agencies promote and help expedite the clearance and use of safe herbicides for these types of applications on BLM lands. Once EPA approves use, clearance and application of a product on BLM lands can be made a higher priority.

3. All management actions within this plan should be addressed in the new Resource Management Plan (RMP) to insure compatibility with the actionable projects stemming from those recommendations into the future.

Future Issues identified with Moderate or Higher Risks

- Prohibitions on management actions (see above)
- Prohibitions on techniques used to manipulate habitat (see above)

Conservation Goals to Address Future Issues

1. Continue “Conservation Goals to Address Current Issues”.

Objectives to Attain Future Conservation Goals

1. Continue “Objectives to Attain Current Conservation Goals”

LIVESTOCK MANAGEMENT/GRAZING:

Many of the categories listed under this risk factor can be cross-referenced to issues in both Habitat Quality and Habitat Quantity. The comments found in those sections may be replicated for the Livestock Management/Grazing narrative.

Excessive herbaceous height in meadows (>6-8 in): This is a low risk factor in this PMU. Excessive herbaceous height only occurs at small specific permanent meadow enclosures, a select few areas where grazing has been suspended to enhance LCT recovery programs and watershed protection measures. These actions affect less than 5% of the meadows and riparian areas in the PMU. The risk factor is rated as low into the future, other than site specific areas closed to grazing for the short-term.

Sagebrush encroachment in meadows from overgrazing: *The loss of habitat and/or diminished quality of meadow habitat is considered to be moderate to heavy over much of the PMU. A complete inventory of the PMU has not been completed by the BLM, relative to the Proper Functioning Condition of both lentic and lotic sites. The three fenced LCT waters in the Montana Mountains are all at rated at Proper Functioning Condition (PFC). BLM has conducted functional assessments on 140+ miles of the PMU involving just lotic ratings. The majority assessed as functioning at risk/static 40+%, properly functioning 20+%, functioning at risk/downward trend 15+%, functioning at risk/upward trend 8+%, and not functioning approximately 5%. Assessment work for the lentic sites has not been*

accomplished for the majority of the PMU. Only a couple of lentic sites, Calavera and Fourth of July Meadows, have been surveyed with both rated as functioning at risk. Improper livestock grazing is believed to be a primary factor, or predisposing factor accelerating erosion and for lowering water tables that facilitates meadow desiccation and subsequent encroachment of sagebrush onto these sites. The current condition of most meadow/riparian sites in the PMU, still support large populations of sage-grouse. Reversing past damage and improving the habitat will, in the long term, maintain and stabilize sage-grouse populations, particularly on late summer use areas. Long-term benefits can also be expected for livestock. Eliminating accelerated erosion will preserve the soil/plant base livestock depend on, and should reduce/eliminate potential water quality issues related to sediment in streams. Often times, the stabilization of the meadow system enhances the water retention capacity for the site. With current allotment evaluations and standards and guidelines being more readily implemented, it is anticipated that improvements will continue into the future to address the concerns of the sage-grouse, as well as stabilization of the watersheds. The use of mechanical equipment and the construction of in-channel structures maybe necessary to raise the water table in concert with spraying undesirable plant species to fully recover many of these meadows.

Water sources surrounded by substantial bare ground: *Most of the open or free water sources, except inside exclosures or areas tied to forage utilization standards for LCT, are surrounded by either herbaceous vegetation shorter than one inch or by bare ground by mid to late summer. The radius of open ground that surrounds water sources increases vulnerability of sage-grouse (particularly broods) to predators. This risk is very evident and is currently rated as moderate to high. As a result of the allotment evaluation process, improvements have started to occur in some areas with additional improvement anticipated in the future. A risk factor rating of low to moderate is a plausible objective into the future as the objectives are controllable and predictable.*

Inadequate access to water: *The risk from this factor is rated low to moderate, and is often site-specific spring developments, pipelines and troughs that have altered the accessibility of sage-grouse to water along numerous systems. Some developments have benefited sage-grouse and some have not. Adverse effects have occurred when all water is captured below ground at the spring source and diverted through a pipe to a trough or series of troughs. Water flows, particularly in drought years, are often not sufficient to meet the demands of livestock and allow water to overflow onto the ground or collect in a small overflow pond. Some troughs have float valves designed not to allow overflow; therefore, water is only available on an ephemeral basis when livestock are in the pasture, or recent precipitation has been sufficient to create ponding. Bird and small mammal escape ramps are absent in majority of the troughs in the PMU creating an additional and unnecessary mortality source for sage-grouse. Sixteen ramps have been installed with the balance being completed in the future. All the problems associated with this risk factor can be mitigated or redesigned to eliminate this unnecessary risk factor within several years.*

Loss/lack of herbaceous cover and insufficient herbaceous stubble height: The rating can be moderate to high on a site-specific basis, particularly around water or riparian sources. These two risks were rated low on a landscape basis, (i.e., across the entire PMU), as it applies to most of the upland sites. Problem areas in and near riparian areas and open water sources are being addressed during the grazing allotment evaluation process.

Risk factors that were considered absent or not an issue were *Loss/lack of desired forbs, Loss/lack of forb production, and Loss/lack of grass production. Trampling of nests* is an unknown risk, and was not rated. Limited telemetry work in the spring of 2002 by Oregon State University did not document trampling of nests as a risk or a contributing factor to nest abandonment. The sample size of radio telemetry on adult hens was less than twenty birds, but did provide some information.

Current Issues identified with Moderate or Higher Risk

- Sagebrush encroachment in meadows from overgrazing
- Water sources surrounded by substantial bare ground
- Inadequate access to water

Conservation Goals to Address Current Issues

1. Utilize same goals from the “Habitat Loss/Quantity” section pertaining to the above issues.

Objectives to Attain Current Conservation Goals

1. Utilize same objectives from the “Habitat Loss/Quantity” section.

Future Issues identified with Moderate or Higher Risks

- Sagebrush encroachment in meadows from overgrazing
- Water sources surrounded by substantial bare ground
- Inadequate access to water

Conservation Goals to Address Future Issues

1. Continue to utilize the same goals from the “Habitat Loss/Quantity” section pertaining to the above issues.

Objectives to Attain Future Conservation Goals

1. Continue to utilize the same objectives from the “Habitat Loss/Quantity” section.

MINING DIRECT/INDIRECT EFFECTS:

The impacts to the habitat from mining are discussed in the *Habitat Loss/Quantity* portion of this report. The impacts were rated as low for both historical and current

activity. The only current activity in the PMU is a small open pit Hectorite Clay mine in the north end of the Montana Mts. The project area covers several acres and is operated every other year for 4-8 weeks, in mid to late summer. Materials are trucked out of the area daily to a rail site and processed in another state. The normal risks associated with the direct impacts to the habitat and the indirect impacts from noise and disturbance are very low or non-existent. If the Hectorite mining operation expands to a number of sites and/or disturbs large acres with overburden, the potential exists for a moderate to high risk to sage-grouse. However, those risks would be directly correlated to both the numbers of operations, scale of disturbance and associated activities. That scenario holds true for other minerals, but the potential for other developments is considered to be low based on existing mineral reports.

Current Issues identified with Moderate or Higher Risk

None identified at this time.

Conservation Goals to Address Current Issues

None

Objectives to Attain Current Conservation Goals

None

Future Issues identified with Moderate or Higher Risks

- Possible loss of sage-grouse habitat from Hectorite mining in the future.

Conservation Goals to Address Future Issues

1. Minimize the risk that existing and/or expanded mining activities in the PMU will have an adverse impact on the sage-grouse population.

Objectives to Attain Future Conservation Goal Number 1

1. NDOW and the BLM should develop annual planning and review meetings with the operators of the Hectorite mine (and others if new activity is proposed) to address potential conflicts with sage-grouse before additional activities occur. This will prevent last minute cancellations/changes to scheduled training missions/events, which will improve the working relationship among all partners.
2. Minerals staff in the Winnemucca Field Office will provide the WFOs wildlife and range management specialists quarterly updates about exploration activities (including new claims) so that BLM and NDOW can develop pre-activity review/planning meetings with mining companies to identify potential effects to sage-grouse early in the planning process, and develop mining/exploration

operational plans that minimize/prevent adverse impacts to Lone Willow's sage-grouse population.

MONITORING, RESEARCH AND EDUCATION:

Manipulating wrong management factors or regulate/change wrong land uses within this PMU was not considered to have an impact on sage-grouse or their habitat. Although tremendous changes in the native habitat to monotypic annuals have occurred in the last twenty years, none of the current practices regarding this risk factor are having an adverse impact on sage-grouse. The matrix team thought that the science and knowledge base to reconvert habitat dominated by annuals was not sufficient to move forward on a large-scale basis. Smaller scale projects, in annual dominated sites, would be more prudent to enhance the learning and knowledge base associated with type converting these sites back to a sagebrush/grass community. Although most of the communities dominated by annuals do not support sage-grouse, the recommendations were to move slow yet aggressively and encourage small trial plots that could be more easily monitored and assessed to determine best scientific methods.

Plans to better identify and enhance information about key sage-grouse seasonal ranges, habitat constraints, and interstate relationships between Oregon and Nevada are crucial in this very important and unique PMU. Additionally, gain insights into the basic habitat requirements of the sage-grouse and why productivity and population densities appear to be so high in this PMU. The information gained could be very useful in other PMU's. Lack of funding to move forward between the two states and land management agencies on these very important issues may very well lead to adverse actions or lack of actions that can impact sage-grouse populations or their habitat. A moderate risk can be applied to this lack of baseline data collection.

Lack of sufficient funds and/or personnel that allow BLM to monitor habitat trends condition, utilization levels and projects has an impact on the sage-grouse habitat. The risk factor rating associated with these activities can range from low to high on a spatial scale. Overall, the risks on a landscape basis are considered to be low to moderate. The risk is predictable and somewhat controllable into the future.

The lack of information relative to lek attendance to determine meaningful sage-grouse trend information within this PMU can be construed as a low risk factor as it relates to management. The PMU is so diversified in its sub populations that it would be very expensive and time consuming to collect meaningful lek information for the entire PMU. Particularly the helicopter lek surveys discussed on pages 5 and 6. The cost/benefit analysis for this activity, in lieu of other more direct efforts to effect changes in habitat can be argued either direction. Intensive lek surveys, particularly in the Montana Mountains, may help establish the reliability of this method for estimating population size when compared to the current mark/recapture project.

Current Issues identified with Moderate or Higher Risk

- Lack of research between Nevada and Oregon to collect baseline information:
 - a. seasonal use areas and patterns between states

- b. what, where, and when relative to vegetation requirements and uses on a seasonal basis
- c. let the sage-grouse tell us what their needs are through follow up
- d. develop more information on the entire PMU, use Montana's as a baseline
- e. Understanding long-term population cycles apart from habitat or environmental constraints

Conservation Goals to Address Current Issues

1. Develop a bi-state research program between Nevada Department of Wildlife, Oregon Department of Fish and Wildlife, Winnemucca BLM field Office, Burns BLM Field Office, University of Nevada and Oregon State University.

Objectives to Attain Current Conservation Goals

1. Ascertain seasonal ranges between the Lone Willow PMU and the Trout Creek and White Horse Mountains in Oregon through radio telemetry work.

2. Determine basic seasonal habitat requirements of sage-grouse within the various use areas between the two states. In addition, determine such baseline information as it relates to habitat for nest success, productivity, brood success, recruitment into the fall months, winter survival, and overall health leading into the breeding season.

2a. A collaborative project among Oregon State University, Winnemucca BLM, Nevada Chukar Foundation, and NDOW has generated over \$100,000 for a marking study in the Montana Mountains for the spring of 2004. Over 50 hens will be fitted with telemetry collars and later 6-7 broods (up to 83) will be marked with telemetry to determine mortality rates. A number of important aspects will be determined such as nest success, re-nest success, habitat use patterns, condition of the habitat, movement patterns, etc. One important aspect of the studies will be to determine how successful or not the sage-grouse perform within any given habitat type, how it compares to the habitat standards set forth in the scientific community and how that information relates to the Ecological Site Potential (‘s) within this PMU. It is hoped that funding and support for this effort will continue into the future.

2b. The University of Nevada is planning to mark 20 hens this winter/spring period to assess overall nutritional health of the sage-grouse from blood analysis. Attempts to recapture the same birds on a quarterly basis and collect blood sample will provide information on a seasonal basis. The project will run concurrent to another area in Elko County attempting to attain the same information for comparative analysis.

2c. The Winnemucca BLM Field Office is planning to provide satellite telemetry collars for use in the Montana Mountains in 2004 and 2005. The exact GPS locations of these birds, in relationship to the habitat they use on a landscape basis, will provide valuable data relative to the sage-grouse requirements on a seasonal basis.

- Winnemucca BLM will pay for the satellite follow up on these collars.

3. Determine population estimation accuracy from intensive helicopter lek inventory work when compared to mark and recapture work being conducted in the Montana Mt. portion of the PMU. The effort will help determine the reliability of lek population estimation work for this and other PMU's.

- Funding sources for this project are not secured at this time

4. Continue NDOW mark and recapture project to assess population estimation process and compare data with spring lek survey estimation process. A continuation of that work over the next two years will hopefully address hunter harvest impacts as it relates to a natural down cycle in the population anticipated to occur during that time period.

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5. NDOW and BLM conduct a review of the ongoing research, habitat projects and management actions within this PMU. All involved parties meet a minimum of once annually. Both NDOW and BLM will insure cooperation, information exchange and consolidation of resources is being maximized.

6. The planning, implementation, monitoring and expanded workload into the future necessitates the following recommendations:

- Create funding for one NDOW sage-grouse biologist within each county or area of responsibility (current game bureau biologist).
- Create funding for one BLM sage-grouse/habitat biologist within each Field Office.
 - a. Sufficient seasonal help to augment and supplement the efforts of the biologist.

Funding: Obviously, a large portion of the responsibility and funding for the above objectives is tied to NDOW and the Winnemucca BLM Field Office. However, assured funding and budgets to accomplish those objectives is another matter. If priority objectives for this PMU, and others around the state, are going to come to fruition then a collaborative effort needs to be put forth to secure a more stable budget. The North Central Local Planning Group recommends that the Governor's Sage-Grouse Conservation Planning Team, Governor's Office, NDOW, Nevada legislature, BLM and all other federal resource agencies collectively secure a funding base to provide additional positions and implement the objectives as they are identified for this PMU and the statewide priority list.

Future Issues identified with Moderate or Higher Risks

- Lack of research between Nevada and Oregon to collect baseline information relative to seasonal use areas, habitat requirements, and the biology and ecology of this species within the PMU.

Conservation Goals to Address Future Issues

1. Continue determining seasonal ranges between the Lone Willow PMU and the Trout Creek and White Horse Mountains in Oregon through radio telemetry work.

- Assure baseline information is available so as to avoid making the wrong habitat management decisions.
2. Continue determining basic seasonal habitat requirements of sage-grouse within the various use areas between the two states. In addition, determine such baseline information as it relates to habitat for nest success, productivity, brood success, recruitment into the fall months, winter survival, overall health leading into the breeding season, DNA, lek population estimation reliability, lek fidelity, etc.

Objectives to Attain Future Conservation Goals

1. Continue existing project funded by Winnemucca BLM, Oregon State University, Nevada Chukar Foundation and NDOW. Expand scope of work to include DNA work, lek fidelity information, reliability of wing analysis data, etc. The scope of the cooperators should also expand to Oregon Department of Fish and Wildlife, Burns BLM Field Office, University of Nevada, as well as other user groups, associations and organizations.

- Attempt to reach out to additional university systems conducting work on sage-grouse through out the west:
 - a. Invitations to conduct work in area, not to replicate efforts, but gain additional information from parallel efforts (often times utilizing the same telemetry on marked birds)
2. Strongly recommend and encourage The Western States Sage Grouse Council to coordinate data collection procedures, vegetation measurements, etc. so comparable data can be assessed across the range of the sage-grouse.

PREDATION:

The risk of predation to sage-grouse in the Lone Willow PMU is largely unknown. Traditionally high nest success rates, production levels and recruitment of juvenile birds into the fall period suggest predation is not a serious issue. Two situations may lead to larger predator effects, but they may not be significant at the population level. First, *higher predator density* in the Bilk Creek Range may occur in conjunction with the domestic sheep operation, and possibly create a higher mortality on sage-grouse as an alternate prey source. Predator control associated with the sheep operation may prevent adverse effects on the grouse sub-population in that area. Second, habitat quantity/quality on winter use areas in Jordan Meadows force grouse to concentrate in a few, relatively small areas. Unusually high densities of grouse could lead to increased predation losses. Also, late summer use areas are very concentrated in and around meadow/riparian systems in the PMU, particularly, those locations where the meadow systems and associated cover have been reduced in size.

No dumps or trash collection areas exist as a point source to draw predators to an area within the PMU.

Red fox has reestablished in parts of the Great Basin and are likely to expand across much of the area. They may become an additional predator on sage-grouse.

The west facing slope of the Montana Mountains and the Double H Mountains support a very healthy population of Golden eagle and Prairie falcon's (cliff nesters). Those areas, as well as the balance of the PMU, support solid populations of Marsh hawks and Red-tailed hawks in the sage-grouse use areas. Like mammalian predators, avian predators (including corvids) do not seem to be a risk factor for the sage-grouse. Wildlife Services implements annual control measures for corvids in King River Valley and Quinn River Valley. Most of the corvid observations appear in those valleys, although they do frequent the sage-grouse use areas.

The construction wind-monitoring towers or wind-generation structures near sage-grouse use areas may enhance roosting sites for avian predators. How wind generation systems and the associated structures (substations, power lines, etc.) may enhance opportunities for avian predators is unclear at this time. Design features may mitigate most of the problem. One tower installed in 2002 and removed in 2003 on the Double H's was not monitored for avian predator activity. Also, increased potential for injury and subsequent predation to sage-grouse may result from the 24 guy wires that support a monitoring tower.

Current Issues identified with Moderate or Higher Risk

None identified at this time.

REALTY ACTIONS DIRECT / INDIRECT EFFECTS:

There are no cities or towns in or adjacent to the PMU. Kings River Valley, a dispersed agricultural area lies between the Bilk Creek and Montana Ranges, but outside the PMU. The year-round population is less than 200 people. Fields of alfalfa, grass hay, and native meadow hay probably provide summer forage sites (following harvest), where such sites did not occur prior to the development of agriculture. The importance of these sites is unknown.

One two-lane *paved road* SR 293 (with right-of-way *fences*) connects the Kings River area to Orovada. It bisects the area between the Double H and Montana Mountains. Over 95% of the sage-grouse population resides north of this highway. SR 293 is not considered a risk factor to sage-grouse as very few grouse use the area. *One powerline*, a 115KV line constructed in 1979, parallels this road and has either caused the loss of or relocation of one lek.

Two large *towers* exist in the PMU. A multi-agency communications repeater on top of Trident Peak (Bilk Creek Range) is not believed to have impacted sage-grouse significantly. Few birds are known to use the area near the site. A wind-monitoring tower in the Double H Mountains probably increased the risk of predation at one lek (erected 2002 and removed late 2003). Harvesting wind energy could have an impact on sage-grouse habitat into the future, depending on the size and scope of the developments

(generally developed in a series or complex of towers). The magnitude of the towers, often exceeding 200 ft., could create disruption to the habitat through the construction of roads, generation towers, substations, powerlines (above or below ground). This risk cannot be rated at this time, as the potential for development has not been completed.

Fences that mark grazing allotments, pastures, exclosures, and private property are located throughout the PMU. The literature indicates that *fences* can be a source of injury or mortality; however, no user group, land manager, telemetry work or individual within the PMU has identified a significant number of collisions between sage-grouse and fences.

Most of the PMU is public land (95%). The majority of private land is concentrated in the Bilk Creek Range, along Bilk Creek, the upper portion of Wilder Creek, the south fork of Cottonwood Creek, and along upper Log Cabin Creek. Although the acquisition of privately owned lands that support sage-grouse can benefit management actions, there is no evidence that maintenance of the sage-grouse in the Lone Willow PMU depends entirely or largely on specific actions on private property in the PMU. The acquisition of private land may benefit small components of sub-populations in this PMU, but will have no influence on the persistence of the population at the scale of the PMU.

Road maintenance (dirt roads), by Humboldt County and more specific to sage-grouse use areas, the BLM, has resulted in promoting invasive or noxious weeds throughout much of the PMU. The normal maintenance and soil disturbance associated with this activity prepares a favorable seedbed condition for many undesirable plant species. The risk is rated at a low-moderate level, with the potential to increase into the future.

Most of the realty actions direct or indirect are believed to be very low, non-existent or unknown when considering over a dozen categories within this risk factor.

Current Issues identified with Moderate or Higher Risk

- Spread of noxious or invasive plants though normal secondary (dirt) road maintenance (low-moderate).

Conservation Goals to address Current Issues

1. Minimize the density and distribution of noxious and invasive plants as a result of road maintenance. This involves both the BLM and Humboldt County.

Objectives to attain Current Conservation Goals

1. Encourage a minimal amount of shoulder or barrow disturbance in association with road maintenance.

2. Plant species next to the road that will dominate the site and prevent the establishment of undesirable species.
3. Initiate the use of safe herbicides along these areas after being disturbed to prevent establishment of noxious or invasive species. Use this practice in conjunction with #2 if necessary to establish desirable species.
4. Treat gravel pits used for road materials with a herbicide to manage noxious and invasive species and their spread.
5. Adoption of various treatments should be prioritized in key sage-grouse use areas, particularly those still supporting R-O habitat.

Conservation Goals to Address Future Issues

1. Continue with “Conservation Goals to Address Current Issue”.
2. Possible wind generation complexes being developed into the future.

Objectives to Attain Future Conservation Goals

1. Continue with “Objectives to Attain Current Conservation Goals”.
2. BLM and Humboldt County meet annually to assess sage-grouse use areas of concern and how to treat roads on a priority basis. The two entities explore options to possibly control the spread of noxious and invasive species, as a bi-product of road maintenance, by utilizing non soil disturbance methods such as the use of herbicides.
3. BLM realty personnel report to resource personnel when applications or scoping documents are received regarding development plans for wind generation towers. Identify potential conflicts with sage-grouse early in the process.

RECREATION DIRECT/INDIRECT EFFECTS:

Twelve potential effects from recreation were assessed, and only a few current or potential impacts were identified.

Loss of meadows/riparian: from two track roads that either dissect or run parallel along a meadow system have contributed to habitat loss. These situations create a source of accelerated erosion and down cutting that leads to a head cut, eventual drying of the meadow/riparian area, and the encroachment of sagebrush. With meadow systems being important concentration areas for late summer use by sage-grouse, the loss of any acreage is important. This risk is considered low at the PMU scale, but moderate to high in specific drainage's. The risk is predictable and controllable into the future. However, rest and often time's mechanical/structural intervention are necessary to repair the existing damage.

Noise/activity that prevents use of nearby riparian habitat: does occur from general camping activity during the late summer months. The general public, archery deer/ archery pronghorn/ rifle pronghorn hunters, and contractors working in the area all impact sage-grouse use in meadows. The number of individuals involved in these activities is relatively low, and activities are short lived. Across the PMU the risk is considered low. The single largest activity resulting in camping or hunting in and around riparian habitat comes from sage-grouse hunters during early to mid October, depending on the season adopted on a biannual basis. Sage-grouse dependence on meadows is somewhat less during this time period. They utilize most of the PMU because their diet has shifted largely to sagebrush by hunting season. The displacement effects access to free water if fall precipitation has not been received. The risk factor rating is considered to be low to moderate and is more a function of dependence given the moisture in the uplands during the hunt period.

Increase potential for fire: is a very real threat that is tied directly to the number of people, vehicles (including ATV's) and campsites. Again, the largest influx of people into the area comes during the sage-grouse season in October. A traditional season setting criteria for all the upland species is to start it late enough so as allow a better opportunity for late summer precipitation to occur. The rationale is to allow birds to disperse and not be concentrated around free water sources during the hunting season. The delayed season framework diminishes the opportunity for human caused fires and reduces the chances for intense fires due to cooler days and higher humidity. The risk factor rating, on a PMU basis, is considered to be low to moderate. Again, the level of risk is directly correlated to the burn indexing of the vegetation on any given year during this time period. The risk is predictable and controllable to a degree through fire restrictions, education, and increased patrols. The most critical area of concern is the remaining sagebrush winter range use area off the eastside of the Montana Mts. If that area is lost to any type of fire, irrespective of the cause, the majority of the population associated with this PMU is in serious jeopardy.

Establishment of noxious weeds: is a problem throughout the PMU. Any recreational activity associated with the area, particularly from vehicles and ATV's, provides a medium to either import and exports noxious weeds in the area or spread them inside the PMU. The risk is rated as low relative to the impacts on sage-grouse habitat; they are predictable and somewhat controllable into the future.

Snowmobile activity on winter use areas: When snow level are sufficient enough to push birds off the summer use areas, snowmobile activity on those site (summer, early brood rearing, nesting) is considered to be a very low risk factor for sage-grouse as the bulk of the population has located on the winter ranges. That determination has been established through telemetry follow up. However, if above average snow levels permit make snowmobile use on the winter use areas, then the added disturbance could become a low to moderate risk factor. On site assessment work will have to be conducted to determine those impacts when those heavy snow conditions occur.

Current Issues identified with Moderate or Higher Risk

- Increased fire danger from recreational activities associated with campfires, vehicles and ATV's.

Conservation Goals to Address Current Issues

1. Educate the public as to the importance of the area for sage-grouse, other wildlife species, and the relevance of continued habitat loss from wildfire in this PMU.
2. Reduce the misuse of vehicles and ATV's off road that contribute to wildfires and the degradation of habitat

Objectives to Attain Current Conservation Goals

1. Public service adds from BLM and NDOW via various media venues, posting the area with signs, and additional patrols in the area during open fire closures to attain voluntary compliance.
2. Develop provisions in the new RMP, being developed by Winnemucca BLM, to address the off road use of vehicles and ATV's.

Future Issues identified with Moderate or Higher Risks

- Increased fire danger from recreational activities associated with campfires, vehicles and ATV's.
- Increased disturbance on winter range sites from snowmobile activity. The potential for this activity will need to be determined onsite during above average winter snowfall conditions.

Conservation Goals to Address Future Issues

1. Continued fire danger from recreational activities associated with campfires, vehicles and ATV's
2. Mitigate conflicts between sage-grouse on key winter use areas and any snowmobile activity if they become evident. Develop provisions in the new RMP, being developed by Winnemucca BLM, to address the problem if it becomes evident.

Objectives to Attain Future Conservation Goals

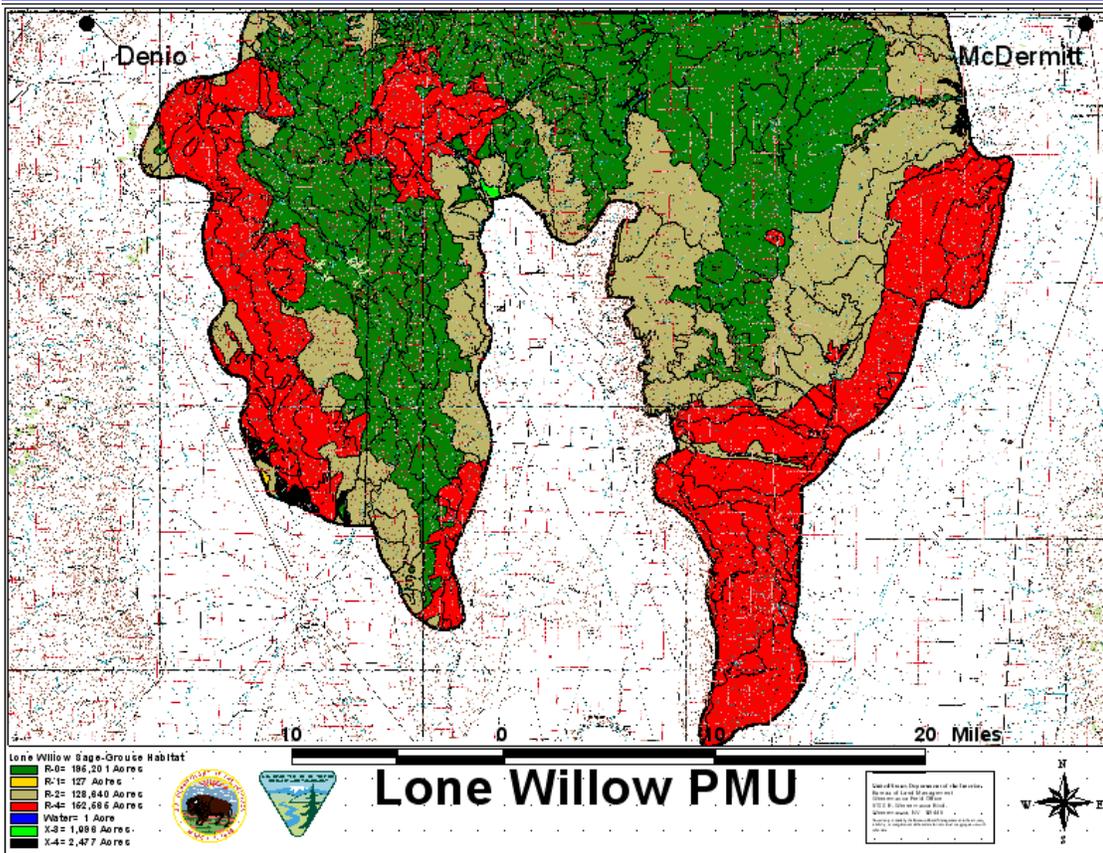
1. Continue with implementation of the fire prevention objectives.
2. Develop provisions in the new RMP, being developed by Winnemucca BLM, to address the off road use of vehicles and ATV's.

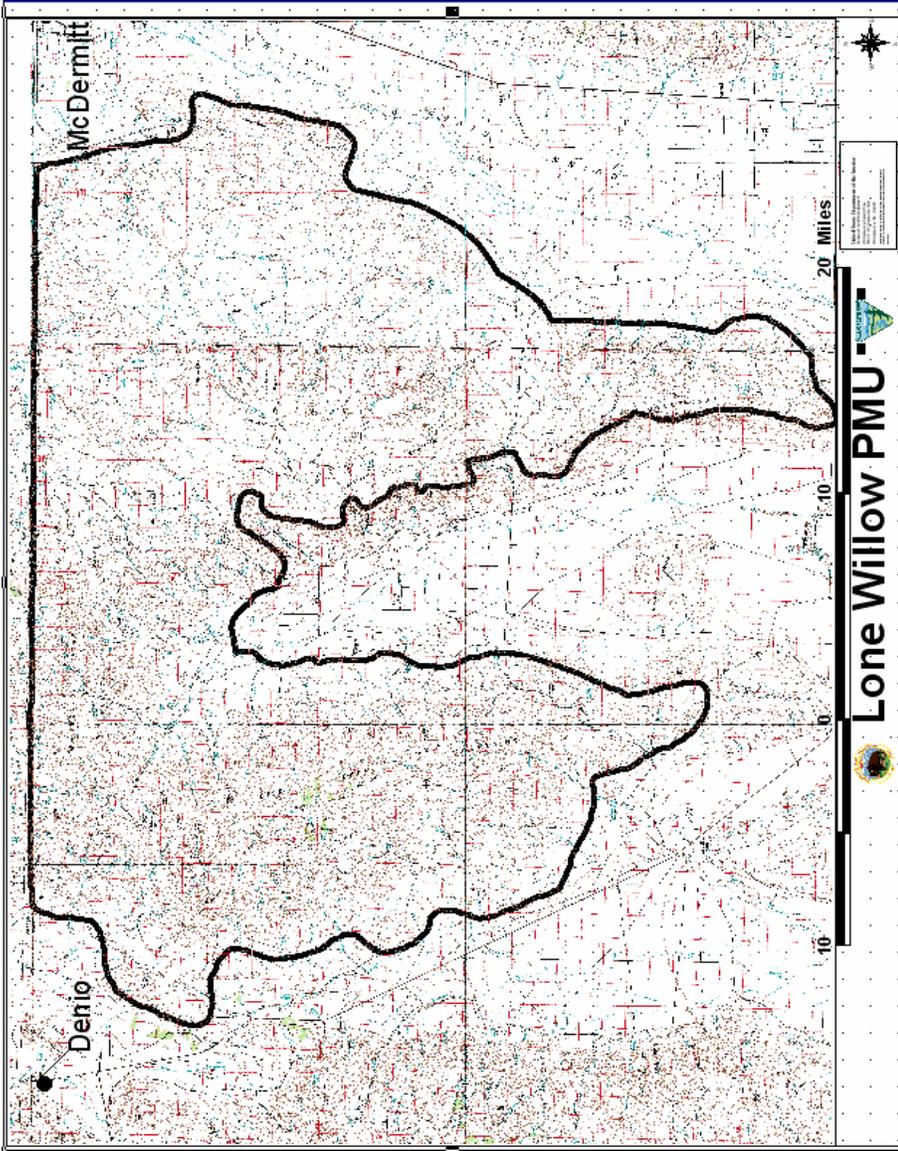
WILD HORSE AND BURRO:

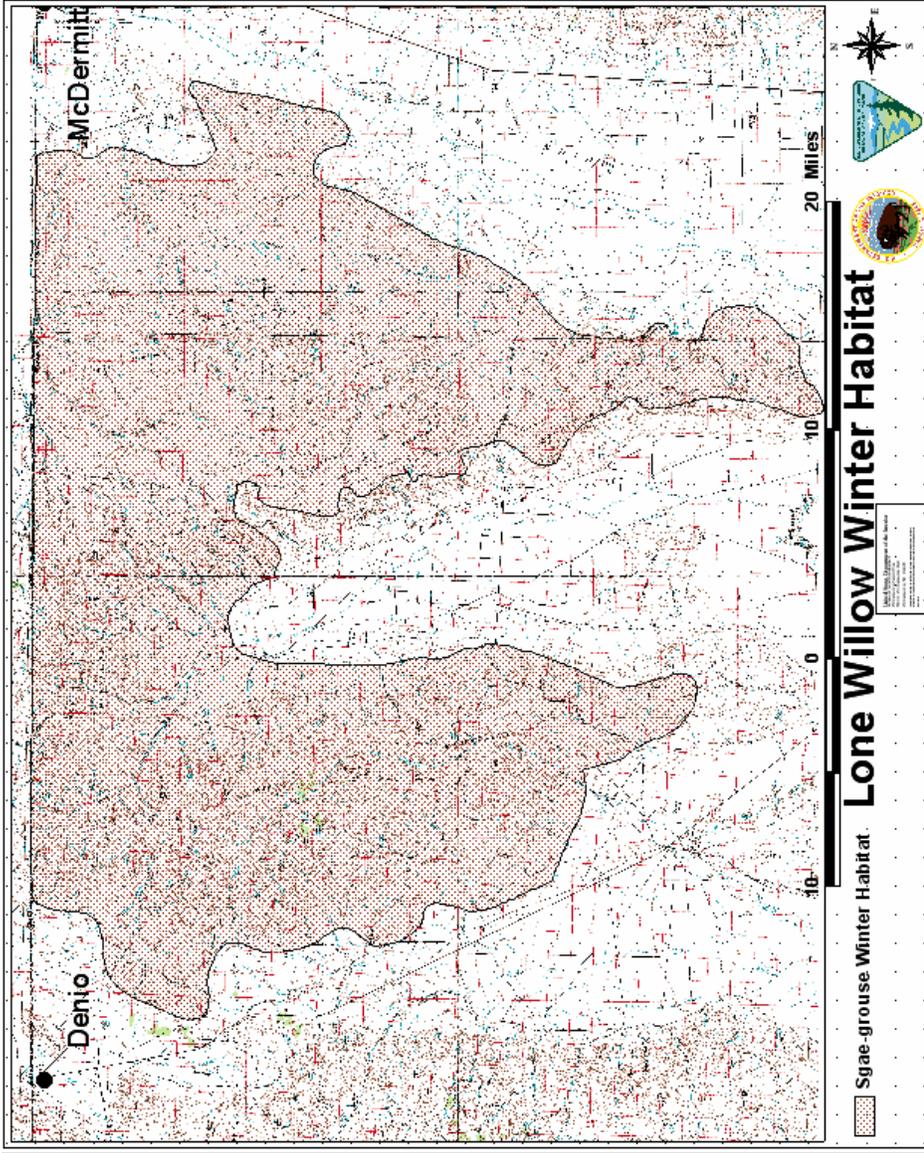
Wild horses and/or burros (WH/B) do not inhabit this PMU. This PMU is not associated with a WH/B Herd Area or Herd Management Area

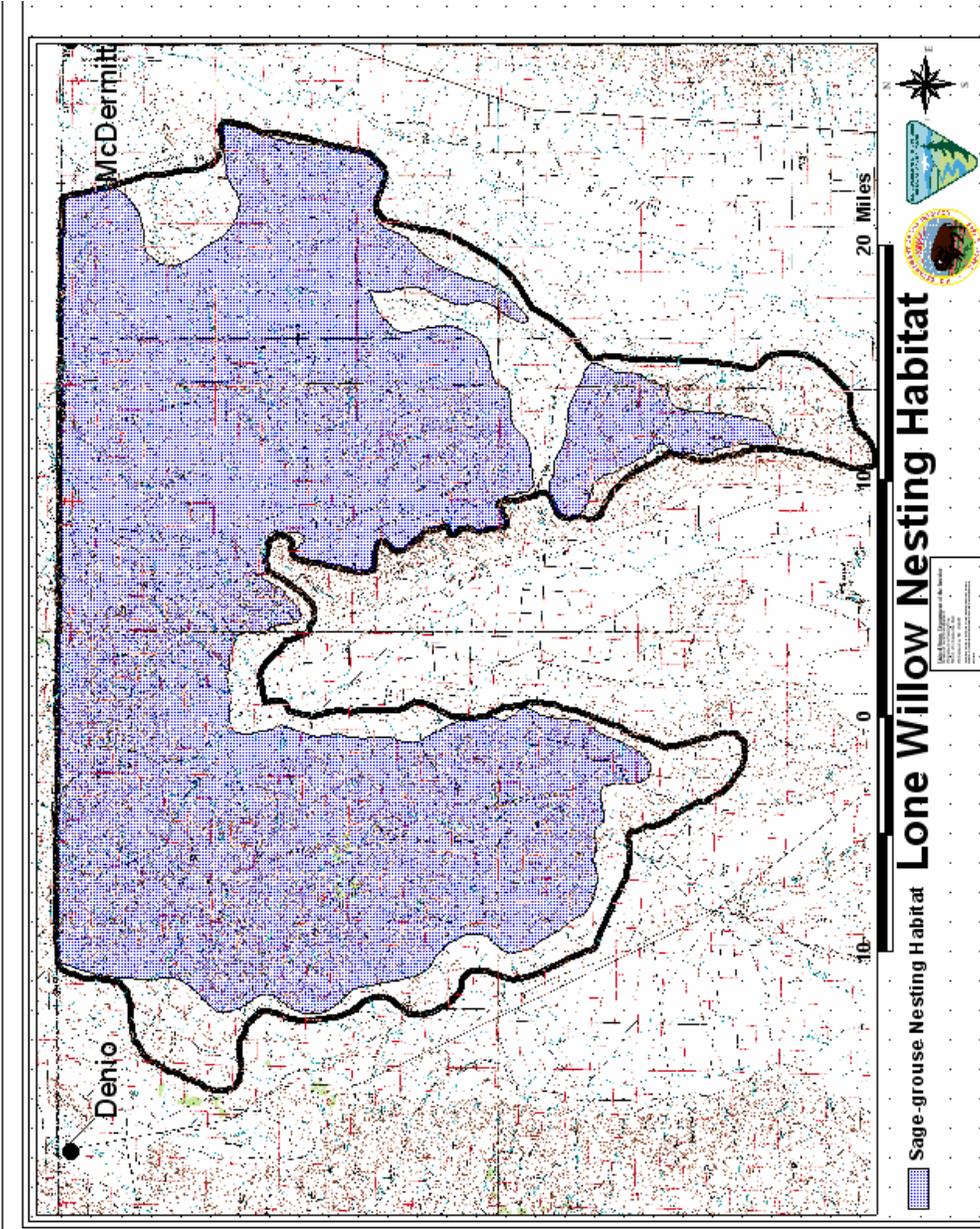
WILDLIFE MANAGEMENT / GRAZING:

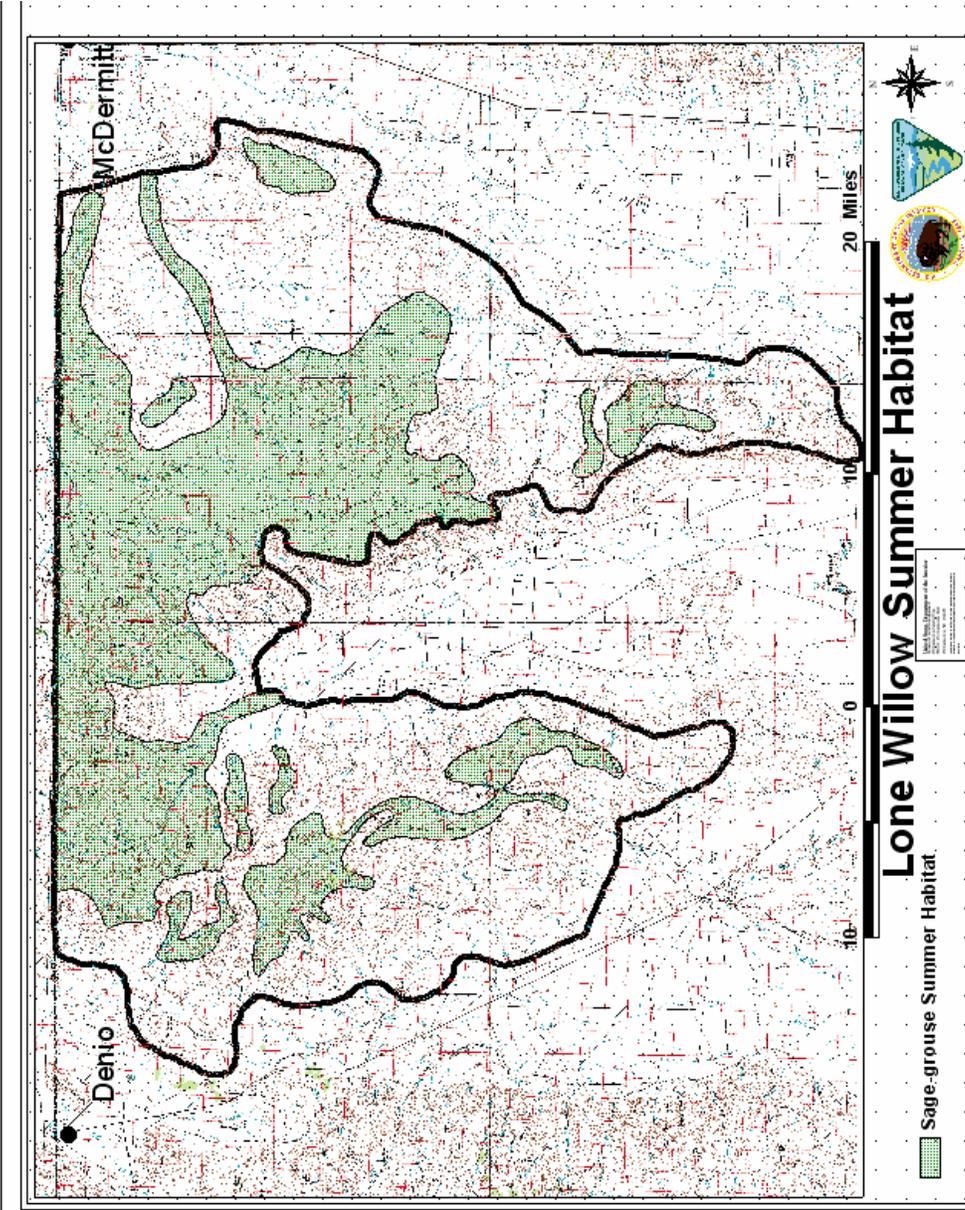
No known issues identified which adversely impact sage-grouse populations or their habitat, with the exception of those under “Create focus on single species management that may harm sage-grouse”, refer to page 27. Natural immigration of elk (grazers) and establishment into portion of the PMU could feasibly occur under within the next couple of decades. Sightings have been reported over the past 30 years with no establishment to date. The likelihood of establishment and any associated damage from those animals to sage-grouse habitat is an unknown. Elk densities would be very low with any damages to habitat being small and very site-specific.

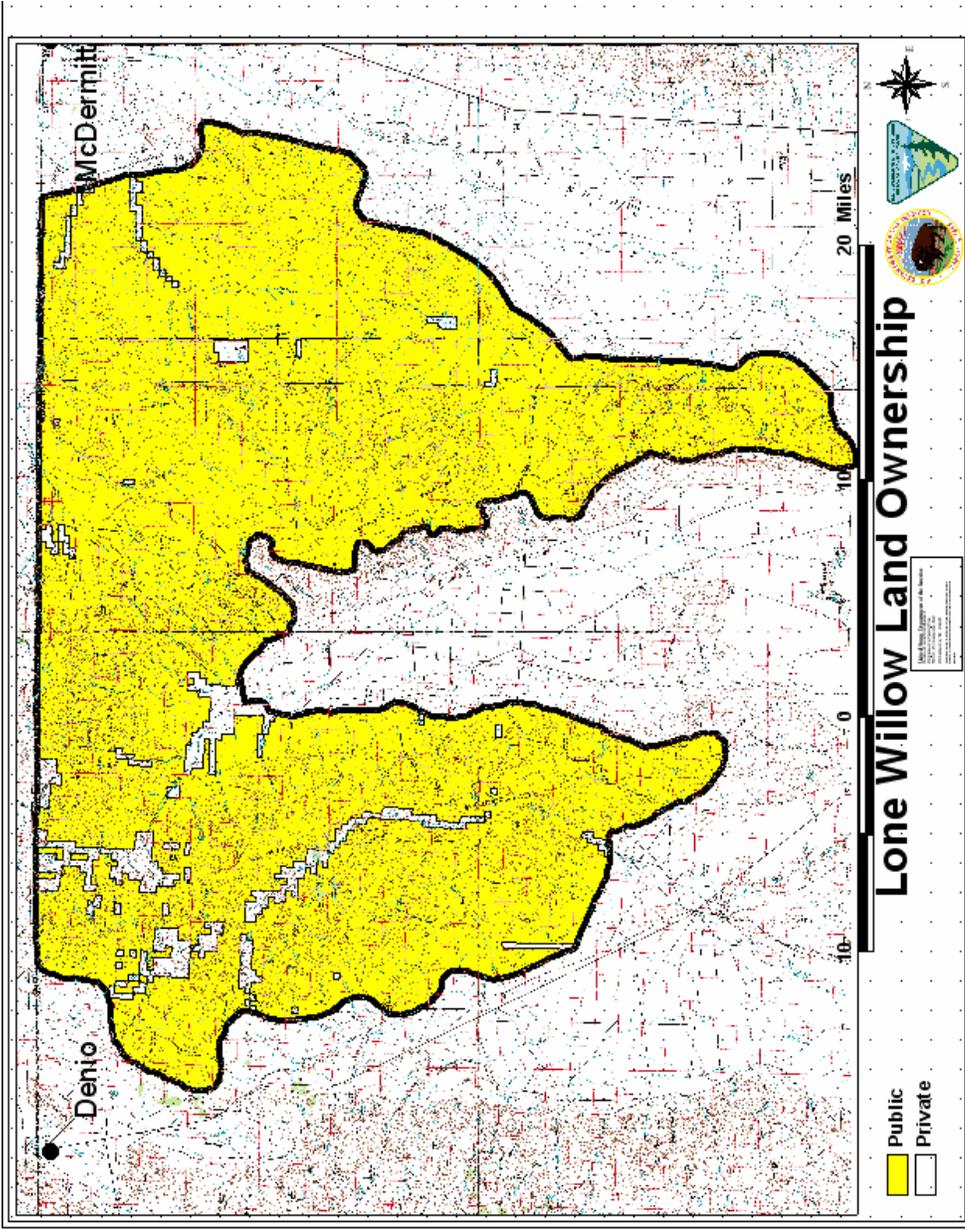












Lone Willow Population Management Unit

RISK FACTOR -- POOR HABITAT QUALITY	Potential Effects on Sage Grouse Habitat Requirements or Sage Grouse Biology	Potential Factors Related to Habitat Quality to Consider During Evaluation. <small>(These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)</small>	Risk/Limitation to the Bird					Spatial Scale					Temporal Scale					Risk Type					
			Present/Absent (Y/N)	Individual (s)	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct (on birds)	Indirect	Controllable	Non-controllable	Predictable
	Lack of Desired Forbs		1	1	1	1	1	2			1	1	2	3	1	1	-						
	Lack of Perennial Herbaceous Cover		1	1	1	1	1	2			1	1	2	3	1	1	1						
	Gaps Present Between Ground and Most Sagebrush Canopies (Umbrella Effect)	Mostly on creeks, not uplands	1	1	1	1	1	-	-	3	2	1	1	2	3	1	1	0					
	Most Sagebrush Canopies Have Sparse Leaves and Stems		1	1	0	1	1	2	1			1	1	2	3	1	1	1					
	Overmature Sagebrush in Extensive Monocultures		1	1	-	1	1	2			2	1	1	2	3	1	1	0					
	Poor Seed Production for Sagebrush	Not an issue	0																				
	Poor Mix of Sagebrush Range Sites	Not an issue	0																				
	Abundant Annual Grasses	Base of mts.	2	2	-	1	1	3			1	1	2	3	1	1	3						
	Noxious Weeds Present		3					3			1	1	2	3	1	1	3						
	Lack of Insects	Not an issue	0																				
	Sagebrush Too Tall for Season of Use	Not an issue	0																				
	Sagebrush Too Short for Season of Use	Not an Issue	0																				
	Sagebrush Cover too High for Season of Use	Not an issue	0																				
	Sagebrush Cover too Low for Season of Use	Not an issue	0																				
	R0 on < 40% of PMU	Not an issue	0																				
		<ul style="list-style-type: none"> Sagebrush Size and Shape Arrangement of Habitat Patches Homogeneity of Vegetation Plant Community age Reproduction Potential of SB Seasonal Uses by Grouse Presence of Undesired Species Variety of Plant Species 																					

Explanations/ Comments/ Summary	Bold and Italics: Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See Habitat Quality narrative section, page 9&10.
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RISK FACTOR— HABITAT LOSS – QUANTITY	Potential Effects on Sage Grouse Habitat Requirement or Sage Grouse Biology	Potential Factors Related go Habitat Quantity to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk Limitations to the BirdSpatial Scale										Temporal Scale						Risk Type				
			Present/Absent (Y/N)	Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable
	Loss of Sagebrush from Fire – Herbaceous Perennial Component Remains	<i>Winter habitat mostly</i>	Y	2	1	3	2 (4)?		2	4	2	2	1	3	3	2	2	4	y		n	y	
	Loss of Sagebrush – Change to Annual Grassland		Y	2	1	3	2 (4)?		2	4	2	2	1	3	3	2	2	4	y		n	y	
	Loss of Sagebrush – Change to Perennial Grass Seeding		n																				
	Loss of Sagebrush – PJ Encroachment		n																				
	Loss of Sagebrush –Mining		y	1	1	1	1	3	1	1	1	1	1	1	2	1	1	1	y	y		y	
	Loss of Sagebrush – Urban Expansion / Other Development		n																				
	Loss of Meadow Habitat		N																				
	Loss of Access to Meadows		n																				
	Remove/Divert Water Supply		N																				
	Loss of Lek Sites	2 in entire area	y		1		1					1	1	1	1				y	y		y	
	Migration Impeded		n																				
	Loss of Habitat Connectivity		N																				

	<ul style="list-style-type: none"> Urban Expansion Road Locations or Engineering Poor Management of Meadows Vegetation Manipulations Location of Infrastructure Fire: Too much or Too Little 	
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Explanations/ Comments/ Summary	<i>Bold and Italics:</i> Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See Habitat Loss / Quantity narrative section, page 13-16
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to fire to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale						Risk Type				
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable
Recent Loss of Sagebrush	Fire (too much)								3	1	1	3	4	1	1	4						
Converted to Cheatgrass				3	2		4		2	1	1	2	3	1	1	4						
Converted to Perennial Grasses					1				2	1	1	2	3	1	1	1						
Lack of Sagebrush Islands						4			2	1	1	1	3	1	1	2						
Pinyon-Juniper Expansion	Fire (too little)	NA																				
Extensive Decadent Sagebrush						1		2	1	1	2	3	1	1	3							
Loss of Desired Herbaceous Understory		Not an Issue at thjis time								1		2	2	1	1							
Potential for Large Fire(s)	Fire (potential)				3					3	3	4	5	3	3	5						

	<ul style="list-style-type: none"> • Fire Frequency and Intensity • Spatial Distribution of Fires • Potential to Burn in Undesired Ways • Fire Rehabilitation • Potential Uses/Abuses of Fire • Ability to Suppress (Resource availability, distance traveled) • Fuels Management 	
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Explanations/ Comments/ Summary	<i>Bold and Italics:</i> Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See Fire narrative section, pages 18-22
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Hunting and Poaching to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Excessive Addition to Normal Mortality Rates	Harvest / Poaching																						
Resulting in Smaller Breeding Population																							
High Harvest Limits Population Size																							
Excessive Harvest of Adult Hens																							

	<ul style="list-style-type: none"> • Are Birds Concentrated in Relatively Few Areas During Hunting Season • Is Population Small or Large? • Is Population Isolated? 	
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Explanations/ Comments/ Summary	Not discussed or commented on as the group deferred to the information being generated from the NDOW sage-grouse mark and recapture study. Much of the information associated with Harvest/Poaching will be determined from that study.
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Potential Effects on the Ability to Manage Sage Grouse Habitat or Populations.	Ecological Process, Management Action, or Land Use	Potential Factors Related to Laws, Policies, and Regulations to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Poor Access to Monitor and Inventory	Laws, Policies, Regulations that Conflict with Biological Needs	Trout Cr./Disaster PK WSA Access not limited at this time	1	1	1	1	1			1	1	1	2										
Increased Costs to Manage or Manipulate Habitat		Costs to operator in-kind NEPA				4				4	4	5	5	4	4	4							
Prohibitions on Management Actions		No ACEC, WSA, WA, NCA											2										
Prohibitions on Techniques Used to Manipulate Habitat		“ “ “											1										
Creates Focus on Single Species Management that May Harm Grouse		LCT in many creeks. Big horns				4				4	4	4	5	4	4	4							

	<ul style="list-style-type: none"> Wilderness, WSA's, and other Special Designations Lengthy Regulatory Compliance Process limits window of opportunity 	
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Explanations/ Comments/ Summary	Bold and Italics: Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See Laws, Policies, and Regulations that conflict with Biological Needs, pages 25-27.
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Grazing Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale								Temporal Scale						Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Excessive Herbaceous Height in Meadows (>6-8 in)	Livestock Management/ Grazing		1	-		1				1	1	2	2	NA	1	N							
Sagebrush Encroachment in Meadows from Overgrazing		<i>some pts. wet/dry cycles</i>	1			1	2	1			2	1	2	2	NA	1	N						
Water Sources Surrounded by Substantial Bare Ground		<i>only at troughs</i>	1			0					0	0											
Inadequate Access to Water		<i>Better water now than ever before. Not applicable</i>																					
Loss/lack of Herbaceous Cover						1	2	1			1	1	1	2	1	1	N						
Loss/lack of Desired Forbs		Not an issue																					
Loss / Lack of Grass Production		" " "																					
Loss / Lack of Forb Production		" " "																					
Trampling of Nests		unknown																					
Insufficient Herbaceous Stubble Height Reduce / Prevent Access to Meadows or Other Critical Habitat				2			1	2	1		1	1	1	2	1	2	N						

	<ul style="list-style-type: none"> • Grazing System • Management Facilities • Concentration Points • Vegetation Manipulations • Season of Use • Duration of Use • Utilization level • Drought Management Strategies • Type of Animal 	
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Explanations/ Comments/ Summary	<i>Bold and Italics:</i> Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See narrative Livestock Management/Grazing narrative, pages 29-30.
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Mining to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale			Risk Type										
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable		
Loss of Water Sources	Mining – Direct Effects	Big Ben Spr. Dried.	1			0	0	1	2																
Loss of Leks		No																							
Loss of Sagebrush Habitat		No																							
Loss of Meadows / Riparian		No																							
Noise / Activity Prevent Use of Nearby Water		Mining – Indirect Effects	No																						
Noise / Activity Prevent Use of Nearby Leks			No																						
Noise / Activity Prevent Use of Nearby Nesting Areas			No																						
Noise / Activity Prevent Use of Nearby Riparian Habitat			No																						
Higher Predator Population			No																						
Regular Disturbance of Feeding			No																						

	<ul style="list-style-type: none"> • Location of Infrastructure • Frequency of Activities • Intensity of Activities • Timing of Activities • Location of Activities • Hazardous Materials / Chemicals • Dewatering 	
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Explanations/ Comments/ Summary	See mining narrative section pages 31-32
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Potential Effects on the Ability to Manage Sage Grouse Habitat or Populations, and/or Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Vegetation Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type						
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Implement the Wrong Management Decisions / Strategies	Monitoring, Research, and Education																						
• Manipulate Wrong Habitat Factors																							
• Regulate / Change Wrong Land Uses																							
		<i>Lack of baseline information on sae-grouse use of area</i>																					

	<ul style="list-style-type: none"> Improper / Incorrect Analysis, and/or Interpretation of Literature Improper / Incorrect Analysis, and/or Interpretation of Data Poor, Improper, or Lack of Data Collection Interruption of Data Collection Consider Scale Insufficient data / knowledge to make informed decisions 	
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Explanations/ Comments/ Summary	Ongoing OSU research. Don't know enough for large-scale treatments. Patch size, shape,etc. Need smaller trial plots. <i>Bold and Italics:</i> Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See narrative comments pages 33.
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Potential Effects on Grouse Biology and Factors that May Contribute to Increased Predation	Ecological Process, Management Action, or Land Use	Potential Factors Related to Predation to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type					
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Year-long	Direct	Indirect	Controllable	Non-controllable	Predictable
Higher Predator Density	Predation	Unknown																				
Loss of Nests / Eggs		" "																				
High Predation Rate for Chicks		" "																				
High Predation Rate for Juveniles		" "																				
High Predation Rate for Adults		" "																				
		" "																				
Contributing Factors are / may be:		" "																				
Insufficient Hiding Cover		Not a problem																				
Depleted Resources (must Spend More Time Foraging)?		No																				
Habitat Quantity/Quality Force Grouse to Concentrate in a Few or Small Areas.		? -1.																				
Early Movement to Meadows to obtain nutritious feed (can also be a drought effect)	No																					

	<ul style="list-style-type: none"> • Predator Numbers • Predator Density • Interactions with Habitat Quality and Quantity • How Changes in Grouse Behavior may Affect Predator Success • Potential Interactions with Weather 	
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Explanations/ Comments/ Summary	I. Concentrate at Jordan Meadows in winter. Unknown effect on predation.
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Realty Actions to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird			Spatial Scale					Temporal Scale				Risk Type								
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Loss of Water Sources	Realty Actions – Direct Effects	No																					
Loss of Leks		Yes Off SR 293																					
Loss of Sagebrush Habitat		No																					
Loss of Meadows / Riparian		No																					
Secondary Road Maintenance	Indirect Effects	<i>Spread of Noxious weeds and invasive plants</i>																					
Noise / Activity Prevent Use of Nearby Water		NA																					
Noise / Activity Prevent Use of Nearby Leks		NA																					
Noise / Activity Prevent Use of Nearby Nesting Areas		NA																					
Noise / Activity Prevent Use of Nearby Riparian Habitat		NA																					
Higher Predator Population		Unknown																					
-Increase Avian Perch Sites		No																					
-Increase Predator Food Sources																							
Increase Potential for Fires		No																					

	<ul style="list-style-type: none"> • Utility Lines / Corridors • Communication Sites • Transportation Corridors • Cities, Towns, Residential Areas • Land Exchanges (Current/Planned) • Fences • Land Ownership Patterns 	
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Explanations/ Comments/ Summary	<i>Bold and Italics:</i> Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See Realty action Direct / Indirect Effects, page 38.
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Recreation to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale				Risk Type							
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting/Early Brood	Summer/Late Brood	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Loss of Water Sources	Recreation - Direct Effects	No																					
Loss of Leks		1-rd																					
Loss of Sagebrush Habitat		No																					
Loss of Meadows / Riparian		No																					
Noise / Activity Prevent Use of Nearby Water	Recreation - Indirect Effects	No																					
Noise / Activity Prevent Use of Nearby Leks		No																					
Noise / Activity Prevent Use of Nearby Nesting Areas		No																					
Noise / Activity Prevent Use of Nearby Riparian Habitat																							
Higher Predator Density		No																					
-Increase Avian Perch Sites																							
-Increase Predator Food Sources																							
Increase Potential for Fires		Yes, vehicles and ATV's																					

	<ul style="list-style-type: none"> • ORV's • Developed Sites or Dispersed • Concentration Points • Road Network • Frequency, Intensity, and Season of Activity • Fire Potential • Establishment of Weeds 	
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Explanations/ Comments/ Summary	<i>Bold and Italics:</i> Indicates the narrative was modified through public input and is not reflective of the initial scores displayed above. Modifications in ratings accepted and approved by the North Central Local Planning Group after soliciting input from the original matrix team. See narrative comments pages 39-41.
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use	Potential Factors Related to Grazing Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale				Risk Type							
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable
Sagebrush Encroachment in Meadows From Overgrazing	Wild Horse and Burro Management	NA																					
Water Sources Surrounded by Substantial Bare Ground		NA																					
Prevent / Reduce Access to Water		NA																					
Loss / Lack of Grass Cover		NA																					
Loss / Lack of Forb Cover		NA																					
Loss / Lack of Grass Production		NA																					
Loss / Lack of Forb Production		NA																					
Trampling of Nests		NA																					
Insufficient Herbaceous Stubble Height		NA																					
Reduce / Prevent Access to Meadows or Other Critical Habitat		NA																					

	<ul style="list-style-type: none"> Population Size Location of HMA's Management Facilities Concentration Points Funding Constraints Season of Use Duration of Use Utilization level AML' Exceeded Drought Management Strategies 	
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Explanations/ Comments/ Summary	No Wild Horse or Burro issues in this PMU
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Potential Effects on Habitat Requirement or Grouse Biology	Ecological Process, Management Action, or Land Use Evaluated	Potential Factors Related to Wildlife Management to Consider During Evaluation. (These Factors are not Rated but are Factors to Consider When Determining Potential Effect on Habitat Requirements or Grouse Biology)	Risk/Limitation to the Bird Spatial Scale									Temporal Scale					Risk Type							
			Individual	Lek	Multiple Birds	All Birds in a PMU	One to a few Points in the PMU	Many Points in the PMU	Drainage or smaller	Multiple Drainages	All of a PMU	Current	Future	Potential	Nesting / Early Brood	Late Brood / Summer	Winter	Direct	Indirect	Controllable	Non-controllable	Predictable	Unpredictable	
Lost / Limited Access to Water	Wildlife Management / Grazing																							
Loss / Lack of Forbs																								
Loss / Lack of Shrubs																								
Shrub Cover To High																								
Grasses in Meadows to Tall																								
Hunter Harvest too High																								
Predation Losses High																								
- Avian																								
- Mammalian / Reptilian																								
Shrubs to Tall																								
Trampling of Nests																								
Insufficient Herbaceous Stubble Height																								

	<ul style="list-style-type: none"> • Impacts of T&E Species Mgmt • Location of Developments and Infrastructure • Habitat Manipulations for Wildlife • Hunting Pressure or Poaching • Management of Other Species • Introduced Species • Wildlife Concentration Points • Grouse Population Cycle 	
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Explanations/ Comments/ Summary	No known issues.
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